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OVERDUE DEBT AS A POVERTY TRAP

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OVERDUE DEBT AS A POVERTY TRAP

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TABLE OF CONTENTS

TABLE OF CONTENTS	5
LIST OF FIGURES.....	7
LIST OF TABLES.....	8
ACKNOWLEDGEMENTS	9
1. INTRODUCTION.....	11
2. BACKGROUND AND RESEARCH QUESTIONS	14
2.1. BACKGROUND	14
2.2. RESEARCH QUESTIONS	16
2.3. RELEVANCE OF THE STUDY	20
2.4. THESIS OUTLINE	21
3. LITERATURE REVIEW.....	22
3.1. POVERTY AND SOCIAL EXCLUSION.....	23
3.1.1. <i>What does poverty mean?</i>	23
3.1.2. <i>Poverty and employment</i>	27
3.1.3. <i>Poverty and financial inclusion</i>	28
3.1.3.1. <i>The role of financial inclusion in reducing poverty</i>	29
3.1.3.2. <i>Determinants having an impact on financial inclusion</i>	30
3.1.4. <i>Poverty and health</i>	31
3.1.5. <i>Poverty trap</i>	34
3.2. OVERDUE DEBTS	38
3.2.1. <i>Poverty and debt</i>	41
3.2.2. <i>Debt and employment</i>	45
3.2.3. <i>Debt and financial exclusion</i>	51
3.2.3.1. <i>Debt and bank account</i>	54
3.2.4. <i>Debt and health</i>	56
3.3. DEBT RELIEF PROGRAMS.....	62
3.4. CONCLUSIONS ON THE LITERATURE REVIEW	66
3.4.1. <i>Filling the gap</i>	69
4. DATA	71
4.1. DATA COLLECTION	71
4.2. CLEANING THE RAW DATA	73
4.3. VARIABLES.....	74
4.4. ETHICAL CONSIDERATIONS AND POTENTIAL LIMITATIONS	75
5. OVERDUE DEBT AS MODERN PILLORY – A THEORETICAL MODEL.....	76
5.1. MODEL OF DEBT CONSOLIDATION	76
5.2. CALIBRATING THE MODEL	80
5.3. CONCLUSIONS	85
6. THE IMPACT OF OVERDUE DEBT – EMPIRICAL ANALYSIS	87
6.1. INTRODUCTION	87
6.2. DEVELOPMENT OF HYPOTHESES	90
6.3. DATA AND METHODOLOGY.....	92

6.4.	DESCRIPTIVE STATISTICS.....	93
6.4.1.	<i>Direct Inquiry.....</i>	93
6.4.2.	<i>Comparative Analysis</i>	95
6.5.	MULTIVARIATE ANALYSIS	105
6.5.1.	<i>Overdue Debt and Employment.....</i>	105
6.5.2.	<i>Overdue Debt and Bank Account.....</i>	109
6.5.3.	<i>Overdue Debt and Health.....</i>	111
6.6.	CONCLUSIONS	113
7.	CONCLUSIONS AND DISCUSSION POINTS	116
7.1.	DISADVANTAGED HOUSEHOLDS AND INDIVIDUALS IN HUNGARY	116
7.2.	OVERDUE DEBT IS A MODERN PILLORY.....	116
7.3.	THE IMPACT OF OVERDUE DEBT ON SOCIAL EXCLUSION DIMENSIONS	117
7.4.	LIMITATIONS OF THE RESEARCH	119
7.5.	ANSWERING THE RESEARCH QUESTION.....	120
7.6.	POLICY IMPLICATIONS AND FURTHER RESEARCH.....	121
	REFERENCES	124
	GLOSSARY	148
	ANNEXES	150
	ANNEX 1 - INDICATIVE LIST OF HOUSEHOLD VARIABLES AND THEIR DESCRIPTIVE CHARACTERISTICS	151
	ANNEX 2 – DATABASE: LIST OF SETTLEMENTS AND COUNTIES	171
	ANNEX 3 – VARIABLES USED IN THE EMPIRICAL ANALYSIS	172
	ANNEX 4 - OVERDUE DEBT AND EMPLOYMENT MODEL SPECIFICATIONS.....	174
	ANNEX 5 - OVERDUE DEBT AND BANK ACCOUNT MODEL SPECIFICATIONS	176
	ANNEX 6 - OVERDUE DEBT AND HEALTH MODEL SPECIFICATIONS	177

LIST OF FIGURES

Figure 1: Poverty trap and the interlinkage between poverty and overdue debt.....	16
Figure 2: The dimensions of social exclusion.....	26
Figure 3: Household debt in % of disposable income in OECD countries.....	39
Figure 4: Relationship between employment, overdue debt and poverty.....	45
Figure 5: Household leverage and unemployment in 22 countries.....	46
Figure 6: Relationship between financial inclusion, overdue debt and poverty.....	51
Figure 7: Relationship between health, overdue debt and poverty.....	56
Figure 8: Participation rate in function of the reduction.....	77
Figure 9: Reductions requested by bad borrowers.....	82
Figure 10: Bad borrowers' willingness to participate in a debt consolidation program.....	83
Figure 11: Required participation rates for bad and good borrowers ($k=2$, $l=9.64$).....	84
Figure 12: Age distribution in the subsamples of individuals with and without overdue debt.....	99
Figure 13: Distributions of net income in the subsamples of individuals with and without overdue debts.....	100
Figure 14: Distributions of the ability-to-pay ratio in the subsamples of households with and without overdue debts.....	101
Figure 15: Perceived social aversion (number of mentions among the first five most convicted behaviors).....	102
Figure 16: Distributions of the perceived social aversion to overdue debts in the subsamples with and without overdue debts.....	103
Figure 17: Distributions of the settlement development indicator in the subsamples of households with and without overdue debts.....	104

LIST OF TABLES

Table 1: Model calibration	80
Table 2: Impact of overdue debt on employment through different channels	88
Table 3: Empirical analysis - results of the direct inquiry.	95
Table 4: Differences between individuals and households with and without overdue debts	97
Table 5: Overdue debt and employment	106
Table 6: Overdue debt and bank accounts	110
Table 7: Overdue debt and health	112
Table 8: Frequencies of negative stigma behaviour.....	163
Table 9: Values assigned to observations missing values.....	169
Table 10: Variables used in the empirical analysis.....	172
Table 11: Overdue debt and employment model specifications 1	174
Table 12: Overdue debt and employment model specifications 2	175
Table 13: Overdue debt and bank account model specifications.....	176
Table 14: Overdue debt and health model specifications 1	177
Table 15: Overdue debt and health model specifications 2	178
Table 16: Overdue debt and health model specifications 3	179
Table 17: Overdue debt and health model specifications 4	180

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1. INTRODUCTION

The ultimate goal of our society is “to leave no one behind” (EU 2019) and to enhance social inclusion. Disadvantaged households in Hungary are trapped in poverty even in times of conjuncture. The poverty trap is deepening and has an impact through generations. Some of these households are facing a long-term debt overhang. Overdue debt, which has built up through the years, further increased by penalty interest and administrative costs became too burdensome endangering the satisfaction of basic physiological needs. This situation forces these households and individuals to hide from debt recovery processes. To break the negative and strengthening spiral of overdue debt induced poverty trap, there is a need to understand the impact of overdue debt on poverty and the dynamics of this relationship in order to better calibrate the policy tools to address poverty.

In light of the importance of social inclusion as a multidimensional and complex process and its link to multidimensional and complex poverty (Sen 1985; Levitas et al. 2007; Saunders 2011), there is restricted research available focusing on the interdependent links between the dimensions of social exclusion, namely the two-sided impact of the lack of access to resources on labour market exclusion, financial exclusion, and the impact on health. This is particularly important, as social exclusion factors can enhance poverty trap (Banerjee, Banerjee and Duflo 2011). Most of the available studies are based on research conducted on the US market or in developing countries. There is significantly less research available on the same topic in Europe and even less in Central-Eastern European countries. Our research aims to fill this gap and provide an analysis that can contribute to the literature on the nature of poverty in the EU’s Eastern bloc and which can enrich the Hungarian literature and provide input for policy makers to address social inclusion.

The central question of our study is overdue debts suggesting the enhanced vulnerability of households living in a disadvantaged region. Overdue debts have an impact on poverty through different dimensions: employment (economic exclusion), financial exclusion, and physical- and mental health (societal inclusion). In general, no matter which relationship we look at, the two-way impact is not discussed in detail in the literature. The impact of unemployment (for example Kempson et al. 2004), financial inclusion (for example Demirgüç-Kunt et al. 2018) and health on debt (for example Bridges and Disney,

2010; Krumer-Nevo et al. 2017) is widely discussed. However, only most recently started researchers to recognise the existence of a reverse impact of debt on employment (Mian and Sufi 2014; Bernstein and Struyven 2017; Herkenhoff 2019; Dobbie et al. 2020; Verner and Gyöngyösi 2020; Bernstein 2021), on financial inclusion (Krumer-Nevo et al. 2017 and Fernandez-Olit et al. 2018) and on health (for example Guariglia et al. 2021) through the decreased labour demand. However, the labour supply channel has received much less attention in the literature. Regarding health issues, many studies focus on mental health and address stress, but to date, we do not know of any studies, which take into account socialising as an indicator of mental health. We would like to strengthen the literature on this account and fill the gap by providing empirical evidence related to the impact of overdue debt on labour supply, the usage of bank accounts, and health issues.

First, our research aims to contribute to the literature on the relationship between social exclusion factors and poverty. Second, we aim to fill the gap in providing evidence that the relationship between debt and other factors like economic exclusion, financial exclusion, and health is a two-way relationship. Third, our goal is to strengthen the international and Hungarian literature on the impact of overdue debt on the most distressed households providing a basis for policy reconsiderations and for further research.

Regarding the research problem as described previously, the main research question is as follows: what is the impact of overdue debt on multidimensional poverty in the case of individuals living in disadvantaged households? To answer this question, we need to formulate the following sub-questions: What are the characteristics of disadvantaged households and individuals living in these disadvantaged households? What is the impact of overdue debt on labour supply? What is the impact of overdue debt on using banking services? What is the impact of overdue debt on the physical- and mental health of the borrowers?

Our research is based on data collected with targeted questionnaires in March and April 2019 by the Soreco Research Kft. Data were recorded with a personal question and answer method, by a so-called multi-stage stratified random sampling procedure. The data collection was anonymised and focused on the financial and liquidity decisions of households in small settlements in one of the most disadvantaged counties of Hungary, Borsod-Abaúj-Zemplén (BAZ) county. The sample is representative of the level of households living in small settlements. After cleaning the raw data, we have information

from 504 households and 1794 individuals. 1196 individuals are of legal age, from whom 179 had overdue debt.

We develop a theoretical model inspired by Akerlof (1978), Tirole (2006), and Mukherjee, Subramanian and Tantri (2019) to derive a feasibility condition for market-based debt relief programs. We found that lenders have no interest to offer payment reductions if non-performing borrowers are few, have small debts, and are difficult to reach. In this situation, poor debtors serve better as deterrents, similarly if we put them into a pillory. Calibrating model parameters to poor households struggling with overdue debts, we show that this might be the case in our sample, too. As, in normal economic circumstances, private debt relief programs are typically not feasible, a state subsidy would be needed to consolidate the debts of the poor. State intervention can be justified both by positive externalities and moral considerations.

The model shows that there is a market failure. This result encourages further examination of the role of overdue debt in creating a poverty trap. With the help of statistical analysis and linear probability models we examine the impact of overdue debt on employment, on having a bank account, and on mental- and physical- health based on targeted questionnaires and in-depth interviews in the most disadvantaged regions of Hungary. We controlled for socio-economic factors (e.g., gender, age, education level, ability to pay) and for settlement and county development indicators. In these regions, a significant part of the society has been the victim of financial exclusion well before the Covid 19 crisis, even under prospering economic conditions. We find that many borrowers hide from debt collection as a consequence of overdue debt that has escalated to an unbearable level due to penalty rates. These borrowers are following the hiding strategy and take their decisions accordingly: to avoid deductions, they do not apply for registered jobs, do not open bank accounts and consequently, they are forced to live under constant stress. We test the robustness of our results with binary logistic models as well as with probit models and conclude similar results. To investigate causality, we also define an instrumental variable, the perceived social norms in the settlement regarding paying back the debt. The results of the analysis of this instrumental variable underline our findings. Overdue debt, therefore, leads to a certain type of debt-trap mechanism resulting in significant loss for both the individual and the society. In this light, policymakers should pay more attention to addressing credit cycles and resolving non-performing debt obligations, especially in this fragile part of society.

2. BACKGROUND AND RESEARCH QUESTIONS

In our research, we aim to shed light on the role of overdue debt in reinforcing poverty. This not only helps to better understand the dynamics of the poverty trap induced by overdue debt but also enhances the rediscussing of current policy tools.

2.1. Background

After the financial crisis of 2007-2011, when non-performing loan portfolios have significantly increased - particularly due to foreign exchange loan borrowing -, there were large scale debt consolidation programs. However, these programs allowed debtors who were not in arrears to repay their existing debt with a lump sum, which meant a significant reduction of debt repayment for those who anyhow were able to meet the repayment conditions of their loans and hence excluded those who really needed debt consolidation (Berlinger and Walter 2015). There were also debt relief programs targeting the poor, but they did not prove successful or were too limited in terms of their timing or of their conditions. Only around 1% of debtors applied for personal bankruptcy which could be because of the lack of understanding of the institution or because the conditions were too restrictive. Similarly, social housing programs for the poor were closed after some years and only a small proportion of applicants were admitted to this program.

Under the Higher Education Excellence Program (FIKP) and as part of the financial liquidity subproject facilitating research on financial inclusion of the disadvantaged societies of Hungary, personal interviews were conducted in small villages in Hungary's most disadvantaged regions. The interviews indicated that households have had large debts for a long time, which they have not been able to repay.

With no hope of solving their problems, the interviewees with long outstanding debts said that in order to finance their basic needs they do not take up a registered (i.e., full- or part-time, taxpaying) job as a significant part (33 or 50%) of their salary would be deducted for loan repayment. Additionally, the alternative would be to take a job for a minimum wage outside their villages leading to additional travel costs and reducing their time spent with their families. In practice, they would end up with less disposable income than they earn from public or shadow-market work where they can be paid in cash without further

deductions. The interviews also indicated that borrowers with overdue debts try to avoid any interaction with the lender banks. Many do not even think to open a bank account due to fear of deductions, shame, and frustration towards financial services providers and regret their past experiences. The interviewees indicated that this situation creates stress, results in depression and has a direct impact on their- and their families' health.

In the meantime, interests on these overdue debts have been accumulating creating a deepening debt trap with diminishing hope that lenders can be ever repaid. The question is raised why lenders do not renegotiate these loans with the borrowers, give partial debt relief and/or relief on the penalty interests, as this at least would cover a part of the outstanding loan.

Based on the indications from the interviews, a detailed and large-sample survey was carried out in 57 small settlements of one of the most disadvantaged areas of Hungary, in Borsod-Abaúj-Zemplén (BAZ) county. The survey targeted financial management questions, also focusing on the impact of overdue debts. 504 respondents reported on 1196 adults and 504 households. The sample is randomly collected and representative of non-urban households.

The results of the survey underline the issues raised by the interviews and show that overdue debt is significant in this part of society. 15% of all adults have overdue debt, 28% of all households have at least one member with overdue debt, and 30% of the surveyed people live in a household with overdue debt. Many of the debtors would be willing to pay to get rid of the problem debt. Interviewees without overdue debt know people in their wider neighbourhood who are suffering from the impacts of overdue debt which contributes to the poverty trap in different ways.

A poverty trap is a situation where a factor creates a mechanism based on positive feedback through which poverty is reproduced or exacerbated (Azariadis 1996). Several researchers examined poverty trap mechanisms (Sen 1999; Banerjee, Banerjee and Duflo 2011; Mullainathan and Shafir 2013; Piketty 2014), but these analyses have not identified the overdue debt as a key driver of the poverty trap. Moreover, most of the empirical research took place in developing countries where the poor have no access to utilities and bank loans which are the main reasons for overdue debt in the case of Hungary.

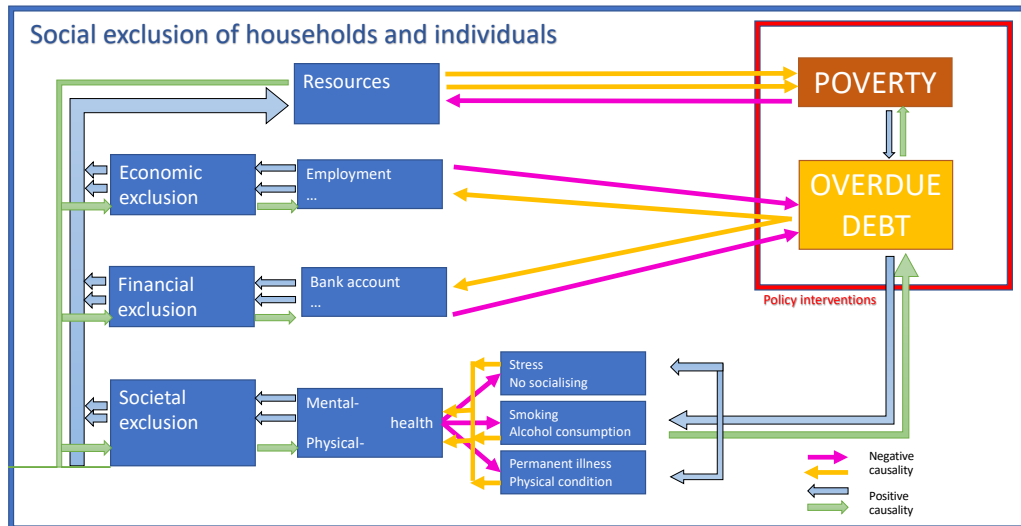
In the above-described Hungarian case, due to long-standing overdue debts, borrowers avoid registered work and electronic payment, instead of trying to make a living from casual work in the black economy and pay for everything in cash. Debtors hiding from debt collection benefit less from the services of the welfare systems (unemployment benefits, health care, pensions, etc.) and from formal financial services (payment services, savings opportunities, loans, etc.). They become more vulnerable and are forced to make worse compromises. Escape from debt collection as a lifestyle severely limits the debtor's and his family members' abilities and opportunities as defined by Sen (2004).

2.2. Research questions

The overarching aim of my thesis is to provide a better understanding of how overdue debt deepens the poverty trap. The main objectives of this research are to understand why the long-lasting overdue debts are not renegotiated between lenders and poor borrowers and to provide empirical evidence how overdue debt impacts the three dimensions of social exclusion: economic exclusion (no registered employment), financial exclusion (no bank account), and societal exclusion (not socializing). Figure 1 below shows how multidimensional poverty and multidimensional social inclusion are interlinked through these elements. Poverty is embedded in social exclusion and can be described through the same dimensions. The direction of the relationships builds two circles. Along the anti-clockwise spiral, poverty is decreasing resources which can lead to financial and economic exclusion and the degradation of well-being, which in turn may lead to increased indebtedness and ultimately to over-indebtedness and overdue debt. Along the clockwise spiral, overdue debt leads to voluntary financial and economic exclusion and causes the degradation of the mental and physical condition leading to decreased resources and deepening poverty which further enhances the risk of overdue debt.

As described more in detail under chapter 3, there is extensive research on some elements mainly focusing on analysing the counter-clockwise direction of the causality (pink and green arrows). Based on the interviews, we believe that there is a two-way causality. Our research is focusing on the clockwise direction (yellow and blue arrows).

Figure 1: Poverty trap and the interlinkage between poverty and overdue debt



Source: own analysis.

Note: Social inclusion is multidimensional and is interlinked with multidimensional poverty as defined by Sen, 1999 through different channels: economic inclusion (e.g., employment), financial inclusion (e.g., having a bank account) and mental and physical well-being (health).

The main research question is as follows: What is the impact of overdue debt on multidimensional poverty in the case of individuals living in disadvantaged households?

To answer this question, we need to answer the below sub-questions:

1. Why is overdue debt not renegotiated between lenders and poor borrowers?
2. What are the characteristics of individuals/households living in the villages of a disadvantaged region of Hungary (BAZ county)?
3. What is the impact of overdue debt on labour supply?
4. What is the impact of overdue debt on using banking services?
5. What is the impact of overdue debt on the physical and mental health of the borrowers?

Choosing a proxy for each dimension of poverty, economic and financial exclusion and mental and physical well-being, the following specific objectives can be defined:

- i. To describe the characteristics of distressed households and individuals with overdue debt and compare their characteristics with households and individuals without overdue debt;
- ii. To examine the relationship between overdue debt and employment;
- iii. To examine the relationship between overdue debt and the usage of bank account;
- iv. To examine the relationship between overdue debt and the health of the debtor;

- v. To argue that targeted policy is needed to address the overdue debt of the poorest part of the society;
- vi. To articulate the implications of the above findings.

We build a theoretical model inspired by Akerlof (1978), Tirole (2006), and Mukherjee, Subramanian and Tantri (2018) to derive the sufficient condition for market-based debt relief programs to succeed and to find an explanation why the current market-based debt relief programs may not be fit to address the poorest. Our research adds to the literature on the impact of debt relief programs, which varies between showing the success of large debt reduction programs (Dobbie and Song 2017) and arguing that large-scale debt waiver leads to a worsening economic situation (Kanz 2016). Like Mukherjee et al. (2019), we argue that debt relief programs can be successful depending on the underlying characteristics or situation of the borrowers. Debt reduction could be a rational decision from an economic aspect, as at least part of the debt could be collected by the lender. Voluntary, market-based debt reductions can be Pareto-optimal (Krugman 1988b, Husain 1993 and Hart and Moore 1998). However, debt relief programs have costs, and they increase moral hazard (Tirole 2006; Fudenberg and Tirole, 1990). Thus, they soften the budget constraint of existing and potential borrowers (Kornai 1998; Kornai, Maskin, and Roland 2003) and can create free lunches for banks profiting from other banks' debt relief programs (Sachs 1990). In addition, it is the payment discipline of not only the borrowers who have received the debt relief that deteriorates in the future (if they expect to be rescued again and again) but also of other previously performing debtors if discounts become known. However, examining the decision of US mortgage debtors on strategic default, Guiso et al. (2013) found that the willingness-to-pay depends also on non-pecuniary factors, such as fairness and morality. Bhutta et al. (2017) also concluded that US mortgage borrowers are reluctant to walk away even if it were beneficial for them, thus, moral hazard can be lower than suspected. This can lead to lower levels of debt relief than the social optimum would explain.

We show that lenders have no interest to offer payment reductions if non-performing borrowers are few, have small debts, and are difficult to reach. Due to moral hazard, it is more beneficial for the lenders to keep these borrowers as deterrents than renegotiating their overdue debts. Calibrating model parameters to poor households struggling with overdue debts in small villages of a disadvantaged rural region in Hungary, we show that this might be the case in our sample too. The regulator needs to step in, as we cannot expect the lender to take into account externalities. Besides accumulating overdue debt,

such externalities are for example the decrease of registered employment and hence decreased tax income, the increase of the shadow economy and cash usage, but most strikingly the deteriorating mental and physical health of the borrower and its entire family.

The question underlying our empirical analysis is what would happen if long-standing non-performing loans were renegotiated and (even combined with partial debt relief) restructured, thus averting the looming horror of debt collection over debtors' heads eliminating the reason for hiding from debt collection. The aim of our research is to find out what impact such a program is expected to have on employment, bank account use, and population health. At the same time, we aim to explain that without policy changes, it can be expected from neither the lender nor the debtor to act in a way to reduce the long-term costs for society.

The central question of our study is overdue debts suggesting the enhanced vulnerability of households living in a disadvantaged region. Overdue debt has an impact on poverty through different channels: employment (economic exclusion), financial exclusion and physical- and mental health (societal exclusion). In general, no matter which relationship we look at, the two-way impact is not discussed in detail in the literature. The impact of unemployment (for example Kempson et al. 2004), financial inclusion (for example Demirgüç-Kunt et al. 2018) and health on debt (for example Bridges and Disney 2010; Krumer-Nevo et al. 2017) is widely discussed. However, only most recently started researchers recognise the existence of a reverse impact of debt on employment (Dobbie and Song 2017; Verner and Gyöngyösi 2020), on financial inclusion (Krumer-Nevo et al. 2017 and Fernandez-Olit et al. 2018), and on health (for example Gilligan et al. 2018 and Guariglia et al. 2020). There are few studies with empirical evidence to prove the direct impact of overdue debt on employment, financial inclusion, and on physical health and there is a lack of analysis focusing on distressed households and regions. Regarding employment, Mian and Sufi (2014) and Verner and Gyöngyösi (2020) provides evidence through labour demand channels. Bernstein and Struyven (2017), Herkenhoff (2019), Dobbie et al. (2020) and Bernstein (2021) found empirical evidence that overdue debts have a direct impact on labour supply. However, to our knowledge, there has been no research that addressed the impact of overdue debt on labour supply due to hiding from debt collection. Regarding health issues, many studies focus on mental health and address stress, but to date, we do not know of any studies, which take into account socialising as an indicator of mental health. We would like to strengthen the literature on this account

and fill the gap by providing empirical evidence related to the impact of overdue debt on labour supply, the usage of bank accounts and health issues.

We use descriptive statistics to show what types of households have overdue debt. We look at the causality between overdue debt and employment, overdue debt and bank account, and overdue debt and health with different methods addressing endogeneity. First, based on direct questions in the survey, we are expecting an answer regarding the direction of the causal relationship and the behavioural explanations that mediate the negative effect of overdue debts. Second, we conduct multivariate analyses – with linear probability model, binary logistic model, and probit model – using control variables. Additionally, we analyse the relationship between overdue debt and employment also with the help of instrumental variables.

In our sample, a significant number of debtors with overdue debts permanently escape from debt collectors. Accordingly, we find that overdue debt reduces the likelihood of having a registered job by 14 percentage points on average. The lack of a registered job alone reduces the probability of opening a bank account by 21 percentage points, and overdue debts further reduce it by 9 percentage points. The negative effect of overdue debts on health is almost as large as the positive effect of a high school diploma. In addition, the health-destroying effect extends not only to the debtor but to all members of the household.

2.3. Relevance of the study

The literature review shows that there is a need for further empirical analysis to better understand the relationships and dynamics between household debt and the dimensions of poverty. We expect that our results provide an insight into how unaddressed overdue debt can lead to an accelerated poverty trap using a representative dataset collected in the most disadvantaged regions of Hungary. Our theoretical model reveals why small debts are not renegotiated by the lender. In light of this market failure, our research aims at finding evidence that overdue debt deepens the poverty trap. Understanding these dynamics, we expect to draw the attention of policymakers to the need of addressing overdue debt in this part of the society with enhanced policy tools. We argue that the state should promote debt relief programs targeting the poor not only for efficiency reasons (for the sake of positive externalities) but also for moral purposes (pillories are unacceptable in modern societies).

2.4. Thesis outline

The thesis is structured as follows: chapter three describes the related literature focusing on poverty and its link to social exclusion, and on the link between overdue debt and poverty dimensions. Chapter four gives information on the raw data, the data cleaning process, and the variables. Chapter five describes the model underlining that lenders have no interest to offer payment reductions if non-performing borrowers are few, have small debts, and are difficult to reach. Chapter six outlines the empirical analysis on debt-induced poverty based on the available data and presents the results of this analysis. Chapter seven summarises the conclusions and raises some points for discussion.

This research has been conducted in collaboration with Edina Berlinger and György Molnár. Our results were also published in Hungarian in (Berlinger, Dobránszky-Bartus and Molnár 2021a), and in English in (Berlinger, Dobránszky-Bartus and Molnár 2021b).

3. LITERATURE REVIEW

In this chapter, we systematically screen the existing academic literature to find an explanation of the role and impact of overdue debt are in developing the poverty trap for the most vulnerable part of society. This requires an interdisciplinary approach and a literature review of poverty which is part of social exclusion, their multiple dimensions as well as the fundamental review of the link between overdue debt and the multiple dimensions of poverty.

The link between poverty and overdue debt requires a multidimensional approach, following the multidimensional nature of social exclusion and its dimensions. Our research is linked to poverty due to the targeted group which covers households living in a disadvantaged neighbourhood, and individuals living in these households. We learn more about the characteristics and the decisions of this target group in line with poor economics. Poor economics suggests that the decisions of the poorest are rational under the given circumstances. (Banerjee and Duflo 2011). Poverty is the lack of minimum capabilities (Sen 1985) or the lack of basic material opportunities. Poverty is embedded in social exclusion, which covers the lack or denied access to resources, markets, public services, rights and social relations (Levitas et.al 2007). Social inclusion provides the ultimate goal for policymakers as it has an impact on the quality of life of individuals and may create economic and social value for society. Social inclusion and poverty are strongly intertwined through a number of dimensions, including economic inclusion (integrating individuals in the economic life of their society, for example through access to the labour market), financial inclusion (access to affordable financial services), and societal inclusion (access to societal relationships, rights, mental and physical well-being, Levitas et al. 2007). We focus our research on the role of overdue debt defined as financial obligations (bank loan repayments, utilities, tax payments) which are due in more than 90 days. Overdue debt provides the direct link between social exclusion and poverty factors.

First, we are looking at literature on the relationship between the dimensions linking social inclusion and poverty on the one hand and debt problems on the other. Finally, we look at literature addressing the role and impact of debt relief programs in light of addressing social exclusion and poverty problems.

3.1. Poverty and social exclusion

3.1.1. What does poverty mean?

Kwadzo (2015) reiterated that there is no single definition and measurement of poverty. The concept of poverty is relative and depends on the group and individuals who are experiencing poverty. Some conceptualisation of poverty addresses the given situation better than others (Laderchi et al. 2003).

The most convenient definition of poverty for measurement purposes is provided by income poverty which means that if a household's or an individual's total income falls below a given poverty threshold, the household or the individual is considered to be poor. Laderchi et al. (2003) and Kwadzo (2015) use the term monetary poverty defined as the shortfall in income compared to the value of a given minimum level of goods that are needed for survival. Others define poverty as the low socio-economic status of the neighbourhood the individual lives in (Krumer-Nevo et al. 2017).

Banerjee and Duflo (2007) were looking at the extremely poor based on the definition of the World Bank in its World Development Report stating that the "extremely poor" people of the world are those who are currently living on no more than \$1.90 per day per person, measured at the 2019 purchasing power parity (PPP) exchange rate. Banerjee and Duflo (2007) noted that in their interpretation, the definition of poor is translated into long-term poor meaning that their permanent income is used up for their consumption. It is important to notice that Banerjee and Duflo (2007) – similarly to Halleröd and Larsson, (2008) - outlines the link between poverty and the social exclusion dimensions by analysing the ability to purchase the goods and services which would be considered as part of their society's general lifestyle (including, for example, education, access to entertainment, etc). This means that they moved from the concept of income poverty towards deprivation poverty.

Halleröd and Larsson (2008) indicated two different measures of poverty: income- (also known as monetary-) and deprivation poverty and show that poverty is closely related to other types of welfare problems. They define poverty as "*poor are those who, due to insufficient access to economic resources, have an unacceptably low level of consumption of goods and services*" (Halleröd and Larsson 2008, p.16). Based on their interpretation,

and similarly to Berthoud et al. (2004), poverty is a welfare problem describing the lack of access to resources. Accumulated welfare problems are reflecting the three dimensions of social exclusion, economic, financial, and societal exclusion.

Here, we note that income poverty in the EU is a relative measure based on an index (AROPE) which consist of a number of welfare and social inclusion metrics (Ferré et al. 2015). It is country-specific. In the case of Hungary, Eurostat's at-risk-of-poverty threshold for a single person household was around 9 Euros/day (Eurostat 2019).

Sen (1999) said that poverty is the “*deprivation of basic capabilities rather than merely low income*”, highlighting those capabilities mean both capacity and ability – including mental and social ability - to do something. As Mendosa Dos Santos (2018) highlighted, the Senian definition of poverty takes into account interpersonal and intersocial relationships. People's relative state compared to others is fundamental, in other words, the individual has a say in what his/her needs and capabilities are. As shown, Sen (1999) distinguished between income poverty and capabilities poverty and concludes that the latter is endogenous with earning power. This means that capability improvement is not only a consequence but also a reason for greater earning power and hence for a better chance of exiting the poverty trap. We understand the poverty trap as a situation where a factor creates a mechanism based on positive feedback through which poverty is reproduced or exacerbated (Azariadis 1996).

Saith (2001) and Laderchi et al. (2003) followed the definition and logic of Sen (1985) on capabilities of poverty. Saith (2001) looked at the evaluation of capabilities in the functioning space and concluded that no matter how the dimensions of the capabilities are chosen, health, nutrition, and education are indicated as common elements. I would like to note here that Laderchi et al. (2003) points to the fourth definition of poverty, which is based on the participation of the poor. I agree that it is an important element of analysing, understanding, and addressing poverty through the eyes of the poor themselves. However, there is an indistinct line between defining and measuring the measurement of poverty (Mendosa Dos Santos 2018). The participation of the poor is not necessarily a definition per se (Salmen 1995; Osinski 2021).

The evolution of the definition of poverty from income poverty through deprivation poverty to lack of capabilities reflects that it is increasingly recognised those economic,

financial and societal factors play a significant role. This underlines that poverty is a multidimensional phenomenon.

Social inclusion is a key concept of our current economic society (Rogge and Self 2019; Moulaert and Mehmood 2020; Rostas and Kovacs 2021). We refer to social inclusion and social exclusion as the same concept from two different angles. In some cases, it is easier to capture one, in other cases, the other. We also do not make any distinction between the agent of the social exclusion, and we accept that social exclusion can be active (Atkinson and Hills 1998) when deprivation occurs due to a deliberate decision for example by a government, passive (Sen 2000) when deprivation is not a result of a deliberate attempt, or voluntary exclusion (Barry 1998; Saunders 2011) when the excluded individual or group decides to be self-excluded. I would argue that voluntary self-exclusion may be also classified under active or passive social exclusion, as it depends on the choices offered for the individual or for the group. The active, passive and voluntary nature of social exclusion is indifferent from the point of view of our research. This classification may be significant at a later stage when policy tools are calibrated to address the poverty trap. This gives a broad framework to our research which focuses on households and individuals living in disadvantaged regions of Hungary.

Social inclusion and thus social exclusion are a result of evolution and are also multi-dimensional (Atkinson and Hills 1998; Burchardt et al. 2002; Levitas et al. 2007; and Saunders 2011; Chan 2017). Based on the definition of poverty by Sen (1985), as well as by Kwadzo (2015), Alkire and Seth (2015), Bourguignon and Chakravarty (2019), Chan and Wong (2020), poverty is multi-dimensional, hence, social inclusion of the poor can only be efficient if its multi-dimensional nature is recognised.

Regarding the link between social inclusion and poverty, we share the views of Bradshaw (2004), Chan (2017) and Whiteford (2020), who distinguished between social exclusion and poverty based on how – on the one hand – it is received by the policy makers and the society, and – on the other hand – how it encourages policy makers and the society to act upon it. Bradshaw (2004) and Chan (2017) ran a quantitative analysis to compare in the British and Hong-Kong society, how socially excluded individuals and households compare to the ones considered to be poor. They quantified social exclusion based on a survey and calculated the proportion of socially excluded individuals and households in terms of employment, services and societal exclusions. Depending on the definition of

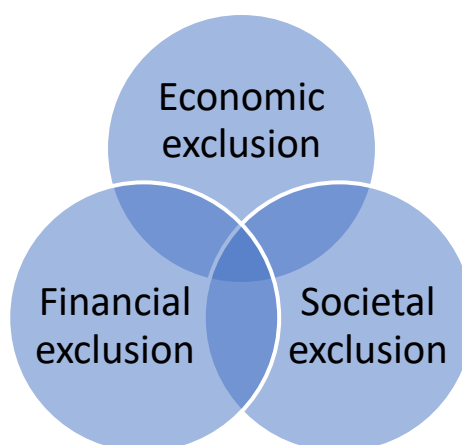
poverty used (income poor, necessities poor, subjectively poor), the overlap between social exclusion elements and poverty varied. However, the proportion of socially excluded was significantly higher in the poor society. This shows that poverty is part of social exclusion through the same dimensions.

Social inclusion based on the definition of Saunders (2011) is the possibility of an individual to be a part of the society along various dimensions. The link between these dimensions evolves over time and across space (Silver 2007). Along with a similar logic, Halleröd and Larsson (2008) recognised social exclusion as an accumulation of welfare problems of different nature. The main dimensions were defined with certain derogations across researchers (Burchardt et al. 2002, p.31; Levitas et al. 2007), but conceptually we can identify the following four dimensional elements. These are closest to the categories of Levitas et al. (2007), defining the (in)ability to do what is in the best self-interest of the individual or household (Barry 1998):

- Access to adequate resources;
- Access to employment;
- Access to services; and/or
- Inclusion in social relationships on different (social- and political) levels.

The first three dimensions cover economic and financial inclusion/exclusion and the last dimension refers to participation or societal inclusion/exclusion.

Figure 2: The dimensions of social exclusion



Source: own analysis based on Levitas et al., 2006. The social exclusion dimensions interact with each other through different channels. Economic exclusion is the exclusion of individuals, households and groups in the economic life of their society, for example through access to the labour market. Financial exclusion is the denied or lack of access to affordable financial services, for example having a bank

account, and societal exclusion covers the denied or lack of access to societal relationships, rights, mental and physical well-being, for example, depression, isolation or perceived lack of help.

The dimensions of social exclusion and poverty are overlapping (Room 1999). They can be the cause and consequence one of another, hence creating endogeneity, which we experience throughout our research.

Following the multi-dimensional approach, we describe below the link of poverty related to (Figure 2):

- economic inclusion through employment,
- financial inclusion, and
- societal inclusion through health.

3.1.2. Poverty and employment

As we saw, the economic exclusion is one of the dimensions of social exclusion and poverty. Being employed plays a significant role in economic inclusion. In this chapter, we focus primarily on the role of (un)employment vis-a-vis poverty with the aim of indicating that there is a channel between employment and poverty.

There is extensive research on unemployment and poverty, starting decades ago focusing on descriptive statistics of populations (Corcoran and Hill 1980) or part of populations and concluding the obvious, that unemployment has an impact on different welfare problems (Brown 1999a; Brown 1999b; Bermeo 2019; Duvendack and Mader, 2019), for example not having a job makes it more difficult for the unemployed individuals and their households to access quality healthcare and education services, to borrow or to become an entrepreneur

Halleröd and Larsson (2008) stated that unemployment is related to poverty, through welfare problems. They also showed that regardless of whether poverty is defined as income poverty (measured as the household's disposable income is below 60% of the median household disposable income) or deprivation poverty (measured using a '*weighted deprivation index taking into account the inability to consume goods and services in accordance with the general lifestyle in the society*', (Halleröd and Larsson 2008, p 17) unemployment is significantly higher compared to the non-poor part of the population. Halleröd and Larsson (2008) proved that that in Sweden, based on 2003

statistics, 7 % of the non-poor population, 18.4% of the income poor population, and 28.9% of the deprivation poor part of the population was unemployed (i.e., was at least 12 months out of employment in the last five years). They considered unemployment as a welfare problem and a consequence of poverty. However, the authors noted that there could be causality in both directions. We accept this logic, especially if we define poverty as income poverty, that unemployment leads to low income and hence results in poverty. At the same time, poverty, especially if defined as deprivation poverty, can indirectly influence – through other welfare problems - employment. Similarly, Sevinc (2020) showed – based on empirical analyses in the UK – that large families with unemployment and being female will more likely face poverty.

Gallie et al. (2003) went a step further and assumed that social exclusion creates a negative spiral: unemployment leads to social isolation, which will increase the likelihood of long-term unemployment. They concluded that this downward spiral exists, even though they found it difficult to prove the direct impact of social isolation on employment. A number of studies proved the existence of this vicious circle based on empirical analysis, for example in Germany (Eckhard 2018; Pohlan 2019), in Switzerland (Rözer et al. 2020), in Spain (Verd et al. 2019).

3.1.3. Poverty and financial inclusion

Financial inclusion increases financial stability and enhances economic growth (Cull, Demirgüç-Kunt and Lyman 2012; Ki, Yu and Hassan 2018; Ozili 2020; Saha and Dutta 2020). We are using financial exclusion and inclusion as antonyms, in other words, we assume they define the same processes with a negative approach (i.e., hinder) when referring to financial exclusion and with a positive approach (ensures) when referring to financial inclusion.

Financial exclusion is defined by Leyshon and Thrift (1995) and Gloukoviezzoff (2007), as processes that hinder people or social groups of people to access the financial system and therefore hamper normal social life. Along a similar logic, Sarma (2008 p.3) defined financial inclusion as “*a process which ensures the ease of access, availability and usage of the formal financial system for all members of the economy*”. More recent definitions were based on these concepts as well complimented with further elements such as the indication of addressing financial well-being, economic and social inclusion (Atkinson and Messy 2013; World Bank 2015; Coppock 2013; Salignac et al. 2016; Fernández-Olit

et al. 2019), and sustainability provision to adjust the individuals' necessities (Nuzzo and Piermattei 2020; de la Cuesta-González et al. 2021). In our research, we follow the definition of social exclusion along Leyshon-Thrift (1995), Gloukoviezoff (2007) and Sarma (2008), as it captures two important elements from a poverty perspective. One is that social exclusion hampers normal life and second it covers access, availability and usage of financial services.

3.1.3.1. The role of financial inclusion in reducing poverty

Fernández-Olit, Martín and González (2019) noted that there is a lack of discussion on financial exclusion related to specific vulnerable populations, i.e., individuals at risk of poverty and social exclusion in terms of unexpected expenses, employment instability, income poverty and deprivation poverty. Chan (2017) argued that financial exclusion can increase the disadvantage of low-income households by deepening their poverty trap, whilst at the same time by widening the gap between accessible opportunities. Ozili (2020) concluded that financial inclusion affects and is influenced by poverty levels, which we recognise that financial inclusion is a double edge sword when it comes to distressed households. Comparato (2015) warned that financial inclusion is addressed primarily by granting access to the credit market with the aim of keeping the stability of the financial system. In his view, social aspects are not addressed, therefore financial inclusion may lead to negative unintended consequences which can deprive the well-being of households and could have an impact on a macroeconomic level. These opposing impacts of financial inclusion suggest that policies addressing the individual's, the household's or the entire society's well-being may need to be diversified as well based on the source of impact.

Economic conditions (Rojas-Suarez 2010; Ardic, Heimann and Mylenko 2013; Demirgüç-Kunt et al. 2013; Park and Mercado 2018) play a significant role in enhancing financial inclusion. At the same time, financial inclusion is important to address poverty (Demirgüç-Kunt et al. 2018; Omar and Inaba 2020) and income inequality, but the path leading to solutions is still under scrutiny (Magwedere, Chisasa and Marozva 2021; Khan et al. 2021). Caplan et al. (2021) highlighted that despite the extensive literature on financial inclusion, there is a lack of empirical evidence that would help policy makers and practitioners address poverty. Our research is focusing on this gap and especially

brings the disadvantaged household members' financial inclusion under the magnifying glass.

Low-income, unemployed, or poorly educated households are the most likely to be affected by unbanking (Anderloni et al. 2007; Ampudia and Ehrmann 2017). Fernández-Olit et al. (2018) linked financial exclusion to social exclusion and claims that the impacting variables are the same for both. They examined the level of exclusion/inclusion of people being at risk of poverty in the financial system and they found that the higher is the risk of social exclusion the lower is the intensity of using banking services. Ibrahim et al. (2018) found that financial inclusion enhances household welfare in Nigeria, but, at the same time, middle- and high-income households gain more compared to low-income households. Similarly, Nam and Loibl (2021) found that financial inclusion has a different impact on low-income individuals, who are close to retirement in the US.

3.1.3.2. Determinants having an impact on financial inclusion

There is extensive literature suggesting that financial inclusion can be achieved by enhancing financial literacy or education with a clear relationship between the two. Atkinson and Messy (2013), Lusardi (2012), Bhushan and Medury (2013), Lusardi and Tufano (2015) showed that the lower the level of financial inclusion, the lower the level of financial literacy, in other words, “*the ability to make informed judgements and to take effective decisions regarding the use and management of money*” (Noctor et al. 1995, p.4). Kovács (2015) shares this concept and concludes that financial literacy has to be enhanced at all levels. as low level of financial literacy of the society is one of the reasons for prolonged financial distress. We share Ozili (2020)'s views that education and enhanced financial literacy on their own is not enough to explain or impact financial inclusion. There are other factors that have a direct impact on financial inclusion. Financial services infrastructure is also a key element. Without access to financial infrastructure (Aggarwal and Klapper 2013; Iqbal and Sami 2017; Kim et al. 2018), financial services products (Chakrabarty 2013; Kumar and Sensarma 2017) which are serving the purpose of financial inclusion, financial inclusion cannot be facilitated. The increase in the number of the financial services players (Léon and Zins 2020; Nkoa and Song 2020); and the expansion of their profile (Anson et al. 2013; Yi, Zhang and Guo 2018; Kumar and Sensarma 2017) also may affect the level of financial inclusion. Financial services innovation (Beck et al. 2014; Kumar and Sensarma 2017; Chinoda and

Kwenda 2019; Malik et al. 2019; Naumenkova et al. 2019; Mushtaq and Bruneau 2019) also can play a significant role, as, for example, – in the digital age – it can help developing regions to be included in the financial circulation. Furthermore, there are a number of research on regulatory interventions (CGD Task Force 2016; Jenik and Lauer 2017) and macroeconomic policy (Mehrotra and Yetman 2014; Neaime and Gaysset 2018; Anarfo et al. 2019; Čihák, Mare and Melecký 2020) which proved to have an impact on financial inclusion. Looking through some of the main impact factors – we underline that given the complexity and the multidimensional aspect of financial inclusion and its primary aim of addressing social inclusion, we have to address a number of factors at the same instance.

Corrado and Corrado (2015) looked at 18 Eastern European and 5 western EU countries to examine the main determinants of the probability of using banking and credit services. They found that especially in Eastern Europe, households with negative employment or income shock are less likely to be financially included.

3.1.4. Poverty and health

In the strict sense of Levitas' categorisation of social inclusion dimensions (Levitas et al. 2007), health is not defined as an independent dimension, but it is a factor that has an impact on social inclusion, can cause and accelerate social exclusion directly, or through social inclusion dimensions (Boardman et al. 2010) and, hence, have a relationship with poverty. Given that health covers both physical and mental health, it can be also an indicator of societal inclusion (i.e., the participation dimension).

In general, socio-economic status and its relationship with mental- and physical health were examined by a number of researchers. Fitch, Hamilton, Bassett and Davey (2011) and Richardson, Elliott and Roberts (2013) summarize the findings of these research studies. Many studies found that disadvantaged individuals (from stressed socio-economic background) have an increased risk of poor physical (Bosma et al. 1999; Lorant, Kust, Huisman, Costa and Mackenbach 2005; Mackenbach et al. 2008) and mental (Hawton, Harrissm Hidder, Simkin and Gunnell 2001; Lorant et al. 2003; Amoné-P'Olak et al. 2009) health. Braveman et al. (2005) already questioned whether the direction of causality between socioeconomic situation and health can be proven, i.e., if the disadvantaged socioeconomic situation can lead to health issues. Recently, more

studies started to look at the reverse impact, suggesting two-direction causality. Amongst others, unemployment and worsening living conditions were concluded to be reasons for mental health issues (Qin et al. 2003; Amoran et al. 2005; Andersen et al. 2009; Almasi et al. 2009; Corcoran and Arensman 2011). One step towards poor and disadvantaged households is that some research linked mental and physical health issues to financial difficulties, such as paying bills for utilities or other services (Butterworth et al. 2009, Spivak et al. 2019; Kourouklis, Verropoulou and Tsimbos 2020), and physical health variables such as smoking (Businelle et al. 2010; Butterworth et al. 2012).

Extensive literature discussed the link between health and socio-economic status, always indicating an income-related factor (e.g., Wilkinson et al. 1998; Chetty et al. 2016; Kraus et al. 2017; Wilkinson and Pickett 2017; Schenkman and Bousquat 2021). Bobak et al. (2000) examined the relationship between perceived control of own life and a number of socioeconomic variables on the one hand and self-rated health on the other hand in seven post-communist countries, including Hungary. According to his findings, Hungary performed worse. 19% of the population had self-rated health poorer than the average. He showed that education, deprivation poverty and perceived control is a strong predictor of self-rating, whilst ecological factors do not have significant explanatory power. Wilkinson and Pickett (2006) based on a systematic literature review, summarised all findings to date in whether income equality was considered to be an impact factor of health issues or not. They concluded that it can be considered proven that income inequality is associated with health issues. At the same time, evidence on the causal effect of income on health is not straightforward (amongst others Frijters et al. 2005; Babones 2008; Kessels and Erreygers 2019).

A clear direction of analysis in the field is the impact of unemployment on health as unemployment is clearly linked to the sudden drop in income in some countries. The impact of the employment status on health is not clear (Browning et al. 2006; Eliason and Storrie 2009; Salm 2009; Schmitz 2011; Cygan-Rehm et al. 2017; Krug and Eberl 2018; Bíró and Elek 2020).

Ng (2013) examined 466 recipients of a work support program in Singapore. When running cluster and regression analysis on low income, multi-stressed households (with low education level, single parenthood, mental and physical health issues, criminal history and children's behavioural and health problems), he found that the most disadvantaged households have the lowest economic performance in terms of personal

and household income. In terms of economic performance, he found that poverty and health issues of the respondent or in their families are associated, although not directly focusing on this relationship.

Similar to Ng (2013), Vaalavuo (2016) also focused on the association between health problems and low-income individuals. By describing low socioeconomic position primarily by income poverty, they looked at the parallel impact of unemployment and poverty on health issues. The novelty in their study was that they look at the deterioration of health and not a static health situation of the individual in 26 EU Members States based on the EU Statistics on Income and Living Conditions. We also endorse that Vaalavuo is using self-rated health status, which can give an estimation of the real health status of the individual. They found that poverty – and unemployment – predicts a worsening health status. An interesting addition to this conclusion is that Selenko and Batinic (2011) did not find empirical evidence of employment being a buffering factor. They examined Austrian individuals who filed for bankruptcy. They looked at the relationship between the individuals' perceived financial distress and mental health. They found that the perceived financial distress was closely related to mental health, whereas the actual amount of debt was not. They expected that employment is directly linked to mental health and that employment moderates the negative impact on mental health. They found that unemployment does cause stress but having a job does not ease the stress related to debt problems.

Looking at the individual level and highlighting the specific nature of poverty, it was also proven that poor people occur to have disproportionate stress and cognitive burden (Banerjee, Banerjee and Duflo 2011; Shah, Mullainathan and Shafir 2012; Mani et al. 2013; Mullainathan and Shafir 2013;). This mental state also correlates with lower saving rates (Karlan, Ratan and Zinman 2014) creating a further poverty trap. Banerjee and Duflo (2007) indicate that the poor in general do not complain, their indicated happiness is good. However, they indicate increased physical and mental stress. Banerjee and Duflo (2007) said that households with increased and mainly food-related stress would reduce their stress levels significantly by additional savings. In contrast with Banerjee and Duflo (2007), we experience that individuals living in a disadvantaged neighbourhood may not have this possibility as stress is expected to be originated from the persistent overdue debt. Banerjee and Duflo (2007) also highlighted that poor households bear most health care risks (both expenditures and foregone earnings) directly. For example, Gertler and

Gruber (2002) found that in Indonesia a decline in the health index of the head of the household is associated with a decline in non-medical expenditures. In Udaipur, large expenditures on health (\$70 and higher, at purchasing power parity exchange rates) are covered by borrowing. Poor people tend to take healthcare services only if very necessary.

Schilbach, Schofield and Mullainathan (2016), Dean, Schilbach and Schofield (2017) and Ong, Theseira and Ng (2019) emphasized that poverty has a significant – restraining - impact on cognitive resources. Dean, Schilbach and Schofield (2018) said that the relationship between cognitive resources including mental health, psychological state and decision making is clear, but proving its role as a cause or consequence of poverty is not straightforward due to endogeneity. It is also difficult to find evidence mainly due to the difficulty of measuring both the effects on cognitive function and the impact of cognitive destruction.

The impact of poverty is also underlined by Baer, Kim and Wilkenfeld (2012) who – based on a community sample - concluded that the poorest mothers have a larger probability to be diagnosed with generalized anxiety disorder, which is not of psychiatric origin, but rather due to severe environmental deficits.

Mani et al. (2013) and Haushofer and Fehr (2014) found that poverty leads to stress and other psychological effects, which favours short-sighted and risk-averse decision making. This leads to behaviour that makes it difficult to escape from poverty due to limited attention and diverting from the goal-directed decision. These findings are examples of the psychological deficit model, according to which poverty reduces and damages the brain function of the individual, which will lead to accelerated poor performance and the deepening of the poverty trap. Frankenhuis and Nettle (2019) complimented this channel with other processes. They said that poor people can adapt to their circumstances and may be able to develop new skills and behaviour which under those circumstances prove to be rational and helps to cope with the challenges they face. It remains, however, questionable if this additional process would be sufficient to make the individual exit the poverty trap.

3.1.5. Poverty trap

The link between poverty - as a long-term persistence - and other – even accumulated – welfare problems invite the focus on poverty trap, “*any self-reinforcing mechanism which*

causes poverty to persist” (Azariadis et al. 2005, p.33 and Barrett and Swallow 2006). Entering poverty trap is a series of decisions. These decisions leading towards poverty trap may be based on rational behaviour of the individual and households under the conditions they live in. However, exiting poverty trap is difficult, if not impossible, and requires major efforts.

Banerjee and Duflo (2007), Shah, Mullainathan and Shafir (2012), Gosztanyi (2017) as well as Pepper and Nettle (2017) showed clearly that the behaviour of the poor is different, as “*scarcity changes how people allocate attention*” (Shah, Mullainathan and Shafir 2012, p682). Banerjee and Duflo (2007) moreover concluded that their conclusions do not change if they look at the poor instead of the extremely poor.

Regardless of the culture of the given society, poor households often behave in such a way that deepens the poverty trap due to personality characteristics, such as the level of extroversion, helpfulness, agreeableness (Anand and Lea 2011), environmental factors, or simply because of living in scarcity (Shah, Mullainathan and Shafir 2012) without clearly stating whether these behavioural elements are cause or consequence of poverty. For example, Lawrance (1991) showed that rich households are more patient with their spending than poor households and this difference is further widened by controlling on race and education. Poor people are present-biased due to pressurizing scarcity, which means that they prefer immediate rewards compared to individuals from better-off households (Banerjee, Banerjee and Duflo 2011; Haushofer and Fehr 2014). Guiso and Paiella (2008) analysed risk aversion and concluded that low and irregular income will have an impact on risk aversion. Gennetian and Shafir (2015) also analyzed economic scarcity and its impact on psychology and behavioural decisions. They concluded that psychological costs of low and unstable incomes turn first into short-term financial hurdles, then into long-standing poverty traps. It is also often evidenced, that poverty has a significant impact on mental health and cognitive skills (Banerjee, Banerjee and Duflo 2011; Mani et al. 2013; Mullainathan and Shafir 2013; Shah, Mullainathan and Shafir 2012, Karlan, Ratan and Zinman 2014, Schaub et al. 2020), which in turn develops psychological responses, strengths and skills of the poor individuals. This will lead to different behaviour (for example present biased decisions, early reproduction) compared to those who are not living under distressed conditions (Frankenhuis and Nettle 2019). Schaub et al. (2020) examined low-income and rich individuals’ cooperative behaviour towards each other. They found that if an individual is facing another low-income

individual, it leads to a decreased level of cooperation and that this behavioural impact is significantly stronger if the individual him/herself is from a low-income household. Others showed that cooperation between individuals living in distress and poverty are more cooperative, especially in their closer society (Bradshaw 2004; Shah, Mullainathan and Shafir 2007; Chan, 2017).

The above indicative findings show that there are behavioural patterns which are even rational decisions (Maloney 2003), of poor households and individuals which may lead to the deepening of the poverty trap.

Dean, Schilbach, and Schofield (2018) summarised the main views on poverty trap for the last century. According to their extensive literature review on this topic, the first theoretical models of Nelson (1956), Leibenstein (1957), Mirrlees (1975), Stiglitz (1976), Bliss and Stern (1978), Dasgupta and Ray (1986) focused on nutrition, i.e., poverty is reinforcing itself, as malnourished individuals are not fit enough to enhance productive work, hence preventing them from earning enough to secure food to step out of malnourishment. They showed that these models were extended to a number of underlying reasons and characteristics of poverty trap such as geographic, financial – and economic and/or cultural forces both addressing theoretical and policy aspects (Banerjee and Newman 1993; Aghion and Bolton 1997; Jalan and Ravallion 2003; Sachs 2005; Fang and Loury 2005; Barrett and Carter 2013; Kraay and Raddatz 2007; Caucutt and Kumar 2008; Shah et al. 2012).

Kraay and McKenzie (2014) classified poverty trap mechanisms in three main categories: poverty traps based on macroeconomic mechanisms, poverty traps based on microeconomic mechanisms and behavioural and geographic poverty traps. The saving-based poverty trap mechanism describes the situation where countries or individuals cannot save preventing them from accumulating capital. This means that their income growth is limited to productivity growth, and they cannot counterbalance unexpected expenses. Such a model is described by Kraay and Raddatz (2007). Also describing the macroeconomic poverty trap mechanism, Caucutt and Kumar (2008) focused on the returns to scale in different economic sectors. If an economy focuses its activities on sectors with constant returns to scale (for example in labour-intensive sectors) rather than increasing returns to scale (for example manufacturing), it will lead to a low-level income equilibrium. Caucutt and Kumar (2008) argued that a poverty trap mechanism is

naturally amplified when there is a coordination failure between agents who invest more in constant return to scale because other agents also do so.

A hybrid macro-and microeconomic factor underlying poverty traps can be geographic isolation as described by Jalan and Ravallion (2003), which prevents individuals and households to grow out from poverty, for example, the lack of possibilities for new technologies, whereas individuals and households under similar circumstances but in other geographical areas would allow the poor to increase their income and capabilities. Some poverty trap models based on a microeconomic mechanism (for example Banerjee and Newman 1993; Aghion and Bolton 1997; Banerjee and Duflo 2011) build on the relationship between financial exclusion (i.e., on the imperfection of capital markets preventing individuals to borrow) and that the production technology is not convex (i.e. individuals with significant capital to invest face higher returns). Individuals, with a low level of wealth, who cannot borrow, will be forced to invest in survival, others with borrowing possibilities may become entrepreneurs. According to the behavioural poverty trap models, individuals take decisions influenced by behavioural aspects, which reinforces poverty instead of constantly saving and reinvesting to exit the poverty trap. For example, Banerjee and Mullainathan (2010) showed that due to declining temptation, i.e., the fraction of a marginal dollar spent on temptation decreases as the total spending increases, poor individuals are present biased when it comes to consumption decisions between temptation and non-temptation goods and therefore investing in future is seen less favourable. Shah et al. (2012) introduced another explanation saying that people living in scarcity have to make significantly more mental effort to provide for their subsistence, preventing their mental capabilities to pay attention to other problems.

Extensive literature was further expanded to find empirical evidence to prove the existence of poverty trap and to describe the mechanism underlying the poverty trap (Sen 1999; Banerjee, Banerjee and Duflo 2011; Mullainathan and Shafir 2013; Piketty 2014; Banerjee et al. 2019; Balboni et al. 2021).

Kraay and McKenzie (2014) showed that the existence of poverty traps either cannot be empirically proven or can be only empirically evidenced in a reduced format or under reduced circumstances. Similarly to Barrett and Carter (2013), they listed a number of theoretical and empirical reasons, why income and asset-related examinations fail to identify poverty traps. One of the key reasons Kraay and McKenzie (2014) raised is the

heterogeneity of poverty, meaning that poverty traps apply in case of certain circumstances in one country or for an individual, but not in cases of others. Heterogeneity plays a key role in analysing both households' and individuals' financial liquidity situation and their link to poverty trap. Furthermore, we note that a great majority of financial liquidity related research – also linked to poverty trap - with empirical data available coming from the US or from third, developing countries (Mosley 2017; Chandra et al. 2019; Banerjee et al. 2019). A comparatively larger amount of data is available in these countries. In Europe, less comparable data is available on the Member States and the financial culture of average European households significantly varies across Member States due to the different set of financial institutions available (Allen et al 2004; Bijlsma and Zwart 2013; Darvas 2013; Batsaikhan and Demertzis 2018).

Moving out of poverty happens very rarely (Gennetian and Shafir 2015) and it requires significant effort and enormous resources to break the poverty trap cycle. Kettle, Truder, Blanchard and Haubl (2016) examined heavily indebted individuals who are juggling between repayment of their credit card debts. They found that indebted individuals with more concentrated debt (i.e., with less separate debt contracts) proved to be more motivated to pay their debts back. They showed that this motivation is fueled by an enhanced perception of progress with respect to their personal goals set up for debt management, and in this case, they are even more willing to work harder. At the same time, their experiment also shows if the debt reaches a high level, concentrated debt is more demotivating. Molnár and Havas (2019) analyzed the lessons learnt from the Grameen model-based Hungarian policy (Kiútprogram) to help the most disadvantaged Roma households to escape poverty. They highlighted that the micro-loan as a policy tool on its own is not sufficient and its effect can even turn out as detrimental.

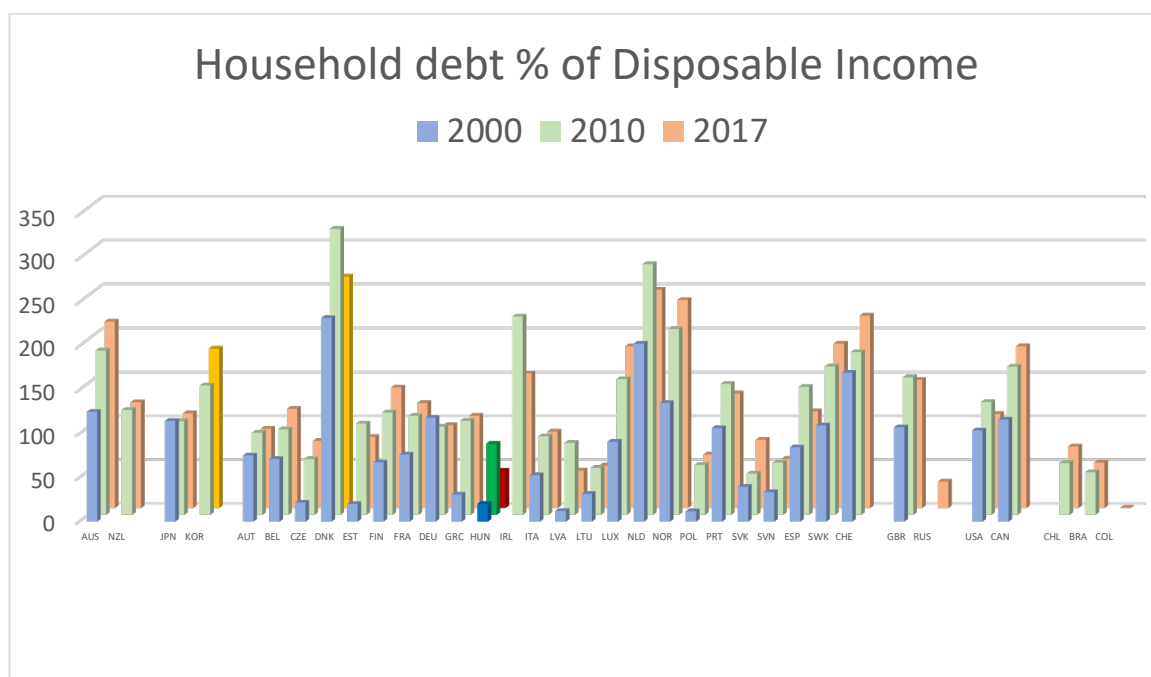
3.2. Overdue debts

Having debt is linked to financial inclusion (Anderloni, Barga and Carluccio 2007; Burton 2017; Sha'ban, Girardone and Sarkisyan 2020; Bermeo 2019).

Indebtedness has significantly increased (Figure 3) all over the world in the last couple of decades (ECB 2009, Bricker et al. 2012; Bankowska et al. 2015; Andre 2016; Pattnaik 2016; Mian, Sufi and Verner 2017; Zabai 2017; Lombardi et al. 2017; Hays 2018; Bricker, Moore and Thomson 2019; Rajakumar et al. 2019; Chan 2020) and its

importance, as well as the recognition of the need to address over-indebtedness (Balgova, et al. 2016) has gained significant focus since 1980.

Figure 3: Household debt in % of disposable income in OECD countries



Source: OECD Database

In the United States, the lowest income households spend, on average, more than 40% of their income on servicing debt between 2007 and 2010 (Bricker et al. 2012). In Europe, before the financial crisis hit, 46.5% of households had a debt servicing ratio of above 40% on outstanding mortgage loans and the minimum income to make end meet was 171% of their reported average income (ECB 2009). In India, in 2014, 52% of farmers were defined as indebted and some states of India had an indebtedness ratio of 90% (Pattnaik 2016). In China, indebtedness has also been significantly increasing, with a household debt-to-income ratio of 79% in 2013 and 93.79% in 2015 (Chan 2020).

To date, there is no clear and agreed definition on what debt, indebtedness, problem debt and over-indebtedness means (Valins 2004; Disney, Bridges and Gathergood 20008; Ntsalaze and Ikhide 2016; Chichaibelu and Waibel 2018; Walega 2021). Kempson et al. (2004) indicated that debt on the one hand describes the situation when individuals fall behind on their household bills or other commitments. On the other hand, it can also mean having an outstanding loan to repay, for example, consumer credit or mortgage credit.

Over-indebtedness is not defined but rather described by indicators and measures. Indicators can be different (Kempson et al. 2004). Bridges and Disney (2004) and Kempson, McKay and Willits (2004) followed a narrow definition meaning that the family has arrears on consumer debt and on other household bills as the primary indicator. Forlicz et al. (2019) chose to define over-indebtedness as debt in arrears. This is covering households in our sample where we are talking about overdue debt (overindebted household hence is a complimentary synonym to a household with overdue debt). Over-indebtedness – in many research – was described as subjective (Schicks 2014) and/or objective (Betti et al. 2007; Schicks and Rosenberg 2011; D’Alessio and Iezzi 2013; Ntsalaze 2016; Chichaibelu and Waibel 2018), and/or administrative measures (Elliot and Lindblom 2019). In case of objective measures, debt-to-asset or debt-to-income ratios are calculated for the individual or for the household suggesting that over-indebtedness can be defined as bearing a significant risk for the borrower. The subjective approach is based on the borrower’s perception of his/her ability to pay. The administrative measures use administrative databases for example on debt restructuring, default, and bankruptcies to identify over-indebtedness. Chichaibelu and Waibel (2018) considered a household over-indebted if it is in default, or in arrears on a loan, or if its debt-service-to-income ratio is greater than 50%. Haas (2006) defined over-indebtedness as follows: the household’s income is insufficient to discharge all payment obligations over a longer period of time, keeping in mind that the alternative is the reduction of the living standard. Ntsalaze and Ikhide (2016) and Walega (2021) built on Haas (2006)’s definition, but defined over-indebtedness as a situation where the deduction of debt servicing from disposable income pushes the household under the poverty line. Disney, Bridges, and Gathergood (2008) described over-indebtedness through a negative approach listing what is not over-indebtedness. They stated that it is not the existence of high levels of debt in the economy. They chose to describe over-indebtedness with a complex indicator where indicators of arrears and defaults are incorporated. Walega (2021) concluded that all definitions have at least four elements in common: economic (ability to pay), temporal (medium or long term), social (reducing expenses), and psychological (stress).

Overdue debt is easier to define based on available guidelines on non-performing exposures which provide a basis for financial services regulation across the world (BCBS, 2016). According to the BCBS Guidelines and by the EU Capital Requirements Regulation (Regulation (EU) No 575/2013 (Henceforth: EU CRR or CRR), a debt is overdue if the borrower is in arrears for more than 90 days. In some cases, the CRR allows

for 180 days, but we are using the 90 days definition for overdue for any type of financial obligation. We would add that based on the CRR non-performing loan definition, we consider overdue debt rather an extreme case of over-indebtedness., Looking at households' and individuals' debt portfolio, it can happen that a debtor has performing loans and overdue debts at the same time, which means that in principle, a borrower can default even if he/she is not necessarily over-indebted (for instance due to physical disability of payment) or not necessarily have overdue debt even if he/she is heavily over-indebted (for example due to managing in the short term to avoid arrears).

From the point of view of looking at the dynamics and relationship between poverty and overdue debt in the literature, we also look at the literature related to poverty and indebtedness, over-indebtedness and problem debt. However, as described above these terms have a different meaning.

3.2.1. Poverty and debt

Indebtedness can worsen poverty as it takes away resources from activities that could help the individual/household to exit the poverty trap both at macroeconomic (Sachs et al., 2004; Hood et al., 2017) and at microeconomic level (Prelec and Loewenstein 1998; Thaler 1999; Dean, Schilbach and Schofield 2017; Ong, Theseira, Ng 2019).

When looking at the distressed households and poverty trap, overdue debt is more exposed in Hungary than in developing countries as Hungarian individuals have access to utilities and bank loans relatively more easily and the main sources of overdue debt are utilities and bank loans. As Banerjee and Duflo (2007), Bricker, Kenickell and Moore (2013) and Durst (2019) indicated, household indebtedness – or its extreme form, long-term overdue debt - is a characteristic of poverty regardless of whether we speak about developed or developing countries, or for that matter about nations somewhere in between (Kempson et al. 2004; Duflo and Banerjee 2007; Anderloni and Vandone 2008; Ben-Galim and Lanning 2010; Balás 2013; Krumer-Nevo et al. 2017).

For decades, over-indebtedness has been increasingly recognized as a key factor of societal- and economic problems (Valins 2004; Betti et al. 2007; Disney et al. 2008; Harvey 2011; Chen et al. 2010; Ramsay 2012; D'Alessio and Iezzi 2013; Krumer-Nevo et al. 2017; Elliot and Lindblom, 2019; Glassmann and Filsinger 2021), as the over-

indebtedness has been increasing due to the increased accessibility of financial services for consumers and the changes in lending rates (Johansson and Persson 2006).

At very early stages of indebtedness research, Katona, in his 1975 book, discussed that one of the reasons for building up overdue debt is that the household or individual in question is faced with a low-income situation, therefore they cannot cover basic needs, hence they turn towards debt. Ben-Galim and Lanning (2010) carried out interactive research with 58 low-income families in Britain to examine the consequences of household debt expansion. They found that not all low-income families use consumer credit or debt facilities. However, poverty and unemployment increased significantly the risk of debt problems. Anderloni and Vandone (2008) concluded that over-indebtedness has a disproportionate impact on households with lower socioeconomic status or on families with multiple disadvantages. Han et al. (2019) examined the impact of household debt in China and found that low-income households are most vulnerable. Kempson et al. (2004) examined debt arrears in the UK and also found that the part of the society which is the most exposed to non-payment were young people with low income and low-income families with children. Krumer-Nevo et al. (2017) looked at poor households in Israel and found that 61% of these households had overdue debt. Ntsalaze and Ikhilde (2016) found that 61.1% of households that have three or more financial obligations as debtors spend more than 30% on debt repayments. Similarly, Banerjee and Duflo (2007) indicated that two-thirds of their interviewed individuals living in poverty had debt.

The above brief summary of existing literature on the relationship between poverty and debt problems shows that there has been a link made between these two phenomena without specifying the direction of the effect of one on another. It is widely accepted that low-income status or poverty has a bearing on overdue debt. However, only in recent years started researchers questioning what the impact of household debt might be on poverty with the work of Ntsalaze and Ikhilde (2016). After looking at the extent and the characteristics of over-indebted South-African households, the author identifies thresholds between over-indebtedness measured by debt-service-to-income and multidimensional poverty measured by the South African Multidimensional Poverty Index. Based on his empirical analysis, he concluded that debt improves welfare only up to the point of reaching the threshold (42.5% debt-service-to-income ratio) then it turns into a negative impact on multidimensional poverty. Walega and Walega (2021) also examined household over-indebtedness in Poland. Based on their Polish survey, they

found that the debt-service-to-income ratio underestimates the proportion of over-indebted households in poor circles in comparison with the ones below poverty line measures. Similar to Ntsalaze and Ikhilde (2016), we find that there is a significant gap in the scientific literature on the analysis of the causality between over-indebtedness and poverty. Furthermore, to date, very few studies (for example Verner and Gyöngyösi 2021) looked at the impact of having overdue debt (instead of debt-service-to-income ratio) on multidimensional poverty in the poorest parts of society. We aim at filling this research gap by focusing on the most exposed parts of the society living in poverty with not only the future prospects of long-term indebtedness but with long term overdue debts which on the top of poverty changes their behaviour and attitude.

As Białowolski (2019) found, the overindebted households were “*characterized by high probability of remaining indebted with very low chances of escaping debt*” (Białowolski (2019), p. 389).

Overdue debt has an impact on poverty (Loko et al. 2003; Krugman 1988a; Sachs 1990; Dynan et al. 2012) through different channels. We identify and classify these channels under the different dimensions of poverty, namely economic inclusion (or economic exclusion) with particular focus on employment (or unemployment), financial inclusion (or financial exclusion) and mental- and physical health of the individual or of the household.

There is extensive literature addressing the reasons for debt problems (amongst others European Commission (2008); Kilborn (2010); Anderloni and Vandone (2011); Finocchiaro et al. (2011); Dynan et al. (2012); Bauer et al. (2013); Angel and Heitzmann (2015); Krumer-Nevo et al. (2017); Forlicz et al. (2019)), highlighting that debt levels are impacted by socio-economic-, economic- and behavioural factors (Valins 2004; Anderloni 2015) also looking at the Hungarian situation (Gáspár and Varga 2011; Szigel and Fáykiss 2012; Dancsik et al. 2015). Socio-economic factors, such as gender, education, financial literacy, age, ethnicity, etc. proved to have an impact on debt problems (Lusardi and Tufano 2015; Bannier 2016; Ntsalaze and Ikhilde 2016, Chichaibelu and Waibel 2018; Almenberg et al. 2021; Gaganis et al. 2020; Meyll and Pauls 2020).

Extensive literature addresses the phenomenon according to which debt problems have negative economic and social impacts (e.g. OECD 2006; Barba and Pivetti 2008; Izák 2012; D'Alessio and Iezzi 2013; Fatoki 2015; Dancsik 2015; Kukk 2016; Mian, Sufi and Verner 2017; Tay et al. 2017; Mika and Zumer 2017; Alter et al. 2018; Ramsay and Williams 2020). At the same time, there is restricted available research on the impact of non-performing debt on poverty. Valins (2004) explained the limited amount of research on this matter with the relationship between poverty and indebtedness, as it makes it difficult to distinguish between the two as impacting factors. Endogeneity creates difficulty to analyze the causal effects of overdue debt. Valins (2004) identified four main categories of consequences of overdue debt: 1) financial problems, 2) mental and physical health issues, 3) stigma and exclusion from social relationships and 4) barriers to employment.

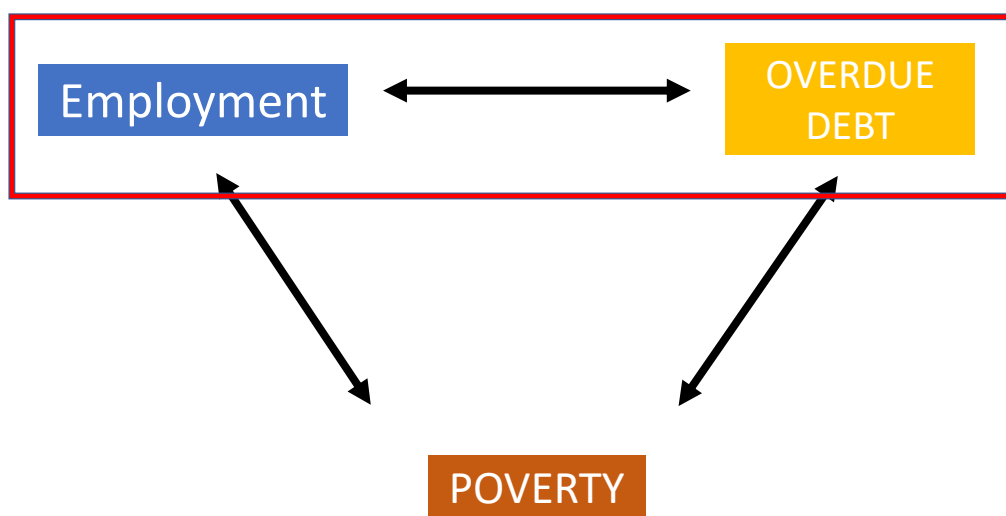
We argue that the main categories of causal effects of overdue debt can be reduced to the following three dimensions:

1. Economic exclusion, which includes Valins' fourth category
2. Financial exclusion includes Valins' first category
3. Societal exclusion which includes mental and physical health problems, stigma and exclusion from social relationships.

There is a two-way causality between these dimensions and overdue debt which leads to a negative spiralling impact feeding into further derogating debt problems, making the exit from the debt trap and poverty trap extremely difficult. For example, having debt can lead to financial hardship restricting the consumption possibilities and reducing the standard of living. In extreme situations, if we look at the households, who are in the centre of our analysis, a borrower with overdue debt can face financial hardship and may be persuaded to make compromises on basic needs. There are borrowers with overdue debt who may decide not to apply for a registered job and not to open a bank account to avoid deductions due to its non-performing financial obligations. The borrower's decision may be rational, he is caged by servicing basic physiological needs due to the very low level of standard of living. Mutsonziwa and Fanta (2019)'s findings that over-indebtedness is likely to lead to increased poverty of the borrowers underline this argument.

3.2.2. Debt and employment

Figure 4: Relationship between employment, overdue debt and poverty

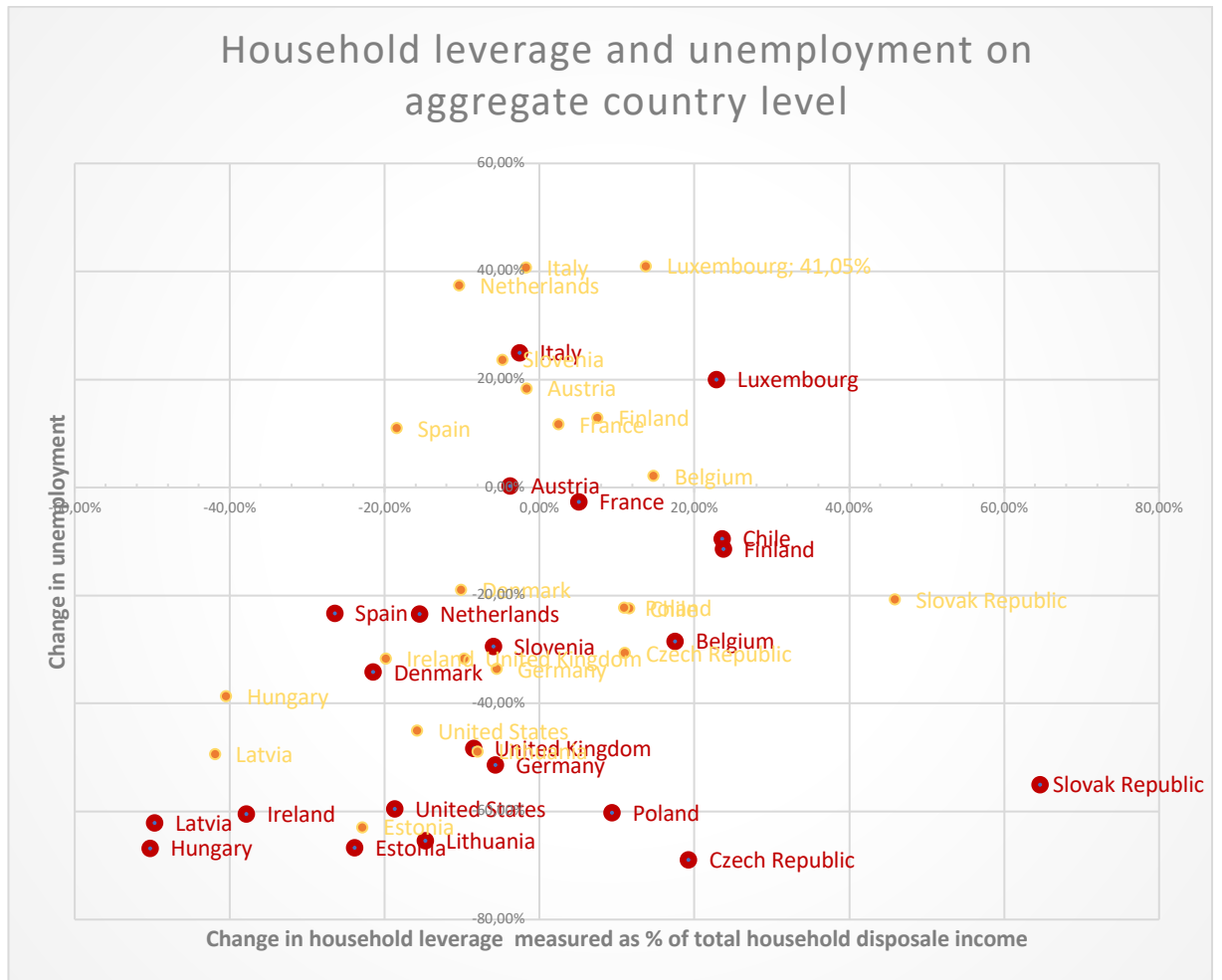


Source: own research

Note: There are three impact lines between employment, overdue debt and poverty: first, there is a relationship between employment and debt, second, there is a relationship between employment and poverty, and third, there is a relationship between debt and poverty

There are three impact lines between employment (as one measure of economic inclusion), overdue debt, and poverty: first, there is a relationship between employment and overdue debt, second, there is a relationship between employment and poverty, and third, there is a relationship between overdue debt and poverty. The latter two relationships have been discussed in chapter 3, sections 3.1.2 and 3.2.2. This chapter is focusing on the link between overdue debt and employment (Figure 4).

Figure 5: Household leverage and unemployment in 22 countries



Source: OECD statistics

Note: the horizontal axis shows the percentage change in household leverage in 2015 and 2018 compared to 2010. Household leverage is measured in the % of total disposable income of the households. The vertical axis indicates the change in unemployment rate compared to 2010. Unemployment is measured as the % of labour force. Data for 2015 is indicated in yellow and for 2018 in red.

Figure 5 shows a positive association between employment and debt. Most of the literature suggested that the logical direction of this relationship can be described by the employment status impacting the outcome on debt payment driven by labour demand events.

Kempson et al. (2004) found that work status is strongly linked to arrears. They concluded that in case of households where the household head was unemployed was twice as likely (32%) to fail on debt payment than those families whose head of household had a full-time job.

Ben-Galim and Lanning (2010) based on interviews with 58 low-income families conducted in the UK on the households' debt and liquidity situation also found that employment has a clear impact on the risk of debt problems, but they already went a step further and assumed that the direction of the relationship can be described by employment being the explanatory factor: those households, where one- or all of the employed individuals lost their jobs increased the likelihood of debt arrears. Similarly, Balás et al. (2015); Campbell and Cocco (2015); Dimitrios et al. (2016) found that if someone loses their job, the probability of non-payment increases significantly.

Keys (2018) examined the impact of a loss of a job with an event analysis on filing bankruptcy and found that a person who lost his job is more than three times more likely to file bankruptcy than those who have not. In his conclusion, he suggests that job loss have a long-term impact on the household's credit market outcomes.

Only most recently, researchers started to focus on the opposite or the two-way direction of the relationship between employment and debt.

Mian and Sufi (2014) highlighted that counties in the US that have highly leveraged households faced a higher unemployment increase. They showed that 10 percentage points decline in the net worth results in a 3.7 percentage points decline in labour demand. Due to a sudden decrease in housing net worth, the collateral value of borrowers fell resulting in deteriorated wealth and borrowing constraints. This leads to a decrease in consumer demand which resulted in a sharp employment decrease.

Bethune, Rocheteau and Rupert (2015) linked the role of households in the labour market to their role in consumption. Households have limits due to endogenous borrowing constraints when they make consumption decisions. The borrowing limits are determined by the characteristics of the financial system, by the rate of return on the borrowers' assets, and by the frequency of liquidity shocks. At the same time, companies are seeking revenue that is endogenous and dependent on the credit available for the households. Based on their model, they conclude that constraints on borrowing decrease employment through aggregate demand. Kehoe et al. (2018) also showed that household debt increase has an impact on employment through labour demand. The authors claimed that employers consider hiring as a long-term investment, hence they use a discount factor to define the employee's value. Credit tightening will lead to decreased demand which leads

to decreased labour demand. As human capital is considered a long-term investment, it decreased the discount value of the employee thus further reducing labour demand. Similarly, Verner and Gyöngyösi (2020) showed that non-performing foreign exchange denominated household loans in Hungary decreased demand which lead to the drop in employment, thus having a negative impact on economic growth. The above-described impact of debt on employment was captured via labour demand channels. Some researchers described evidence through labour supply channels.

Bernstein and Struyven (2017) examined the housing lock hypothesis on the Dutch market and found that negative home equity leads to a 74-79% decline in labour mobility. Other research also provides evidence that the decrease in home equity reduces the labour options for low-income households (Bos et al. 2018), decreases labour mobility (Ferreira et al. 2010; Ferreira et al. 2011; Foote 2016) and complicates the process of finding a job (Brown, Matsa 2016). Bernstein (2017) and Bernstein (2021) also found that non-performing household loans lead to a 2-6% decrease in labour supply. This reduction is mainly fuelled by moral hazard in order to avoid any implicit tax deduction due to marginal income (Mulligan 2008; Herkenhoff and Ohanian 2011; Donaldson et al. 2015). Bernstein (2021) found that there is a non-linear, but positive relationship between housing wealth and labour supply. Debt overhang is one of the driving mechanisms – besides housing lock and financial distress - between home equity and household income. We also show that labour supply decisions are influenced by the changes in household income due to expected deductions after overdue debts, which may behave as implicit tax and therefore reduce income. In contrast with Bernstein, however, we look at a new channel, hiding from debt collection, through which overdue debt affects labour supply. Additionally, we do not only look at mortgages and housing loans but any type of overdue debt, as regardless of the origin of the debt, it will impact the households' finances.

Dobbie and Song (2017) examined the impacts of short- and long-term debt relief instruments. They conducted an experiment with randomly chosen credit card borrowers in arrears who were offered a combination of debt repayment reduction on the spot and a delay in debt write-down Dobbie and Song (2017) raised that there is a possibility that the borrowers can choose to be excluded from the labour market (or from financial services) in order to make the debt collection more difficult. This logic is similar to our take-aways from the data we analyse, as debtors choose not to be employed in a registered job or open a bank account due to the fear of deductions. In their analysis, there was an

additional borrower's screening included in the experiment to exclude this behaviour. We, on the other hand, will directly focus on this behaviour. The authors assumed the repayment program can increase labour supply by decreasing the reason for fear for a deduction via decreasing the court orders for withholding salary. Dobbie and Song (2017) found evidence – although weak – that long-term debt write-downs has increased employment by 1,7 percentage points a couple of years after the experiment and that this impact is stronger for borrowers with a debt-to-income ratio higher than the median. According to Bos et al. (2018)'s estimations, if there is any negative credit information apparent on the credit report, for an additional year it reduced employment by 3 percentage points and wage earnings by around a thousand dollars. Dobbie et al. (2020) looked at bad credit reports and found that financial distress has a direct impact on labour supply. Similar to Herkenhoff, Phillips and Cohen-Cole (2016a and 2016b), they claimed that removing the bankruptcy flag from the individual's credit report results in 0.4 percentage points increase in employment, by making it easier for the employee to find a job, to keep a job or having an impact on the salary related to the job offer (Chen, Corbae and Glover 2013; Bartik and Nelson 2016; Bos et al. 2018, Cortés et al. 2018; Herkenhoff 2019; Ballance et al. 2020).

Herkenhoff (2019) examined the access of unemployed households to borrowings. Focusing on credit card debt, he looked for evidence on how credit constraints impact the labour market. Besides stating that with the increase in household debt stock the impacted part of the population also increased, he showed that borrowers with high debt will require higher wages in order to ensure the same level of consumption. Donaldson et al. (2019) concluded that in Herkenhoff's reading households take more debt when they are unemployed, whereas others show that households are reducing their debt when they are unemployed (Mian, Sufi and Trebbi 2015; Donaldson et al. 2019).

A vast amount of research focuses on the US bankruptcy system and its impact on labour demand and supply or decisions on labour supply (Chen 2012; Herkenhoff and Ohanian 2012; Dobbie and Song 2015; Athreya et al. 2015). This is understandable as the US has an available, public database and credit reports are in daily use of employers and creditors. Although the bankruptcy system represents only an indirect impact of debt on employment, we can capture well the logic of this direction in the relationship. It should be noted, however, that bankruptcy is not a straightforward consequence of long-overdue debts (White 1998; Spooner 2012).

Donaldson et al. (2019) used a labour search model to find an explanation why after the increase in household debt there is a decrease in employment. In order to be motivated to work with the debt overhang and secure the same level of consumption, they needed to receive higher wages. Consequently, employers will reduce the number of available positions due to the increased wages requested. This “vacancy posting effect” results in a negatively spiralling debt effect, namely that households taking on debt are more likely to be unemployed. Unemployment leads to a higher risk of default and hence the cost of a loan is increasing. The authors concluded, that on an aggregate level, higher household indebtedness leads to high unemployment. This has been also proven by Apergis et al. (2020) who tested this argument on the US car loan market and its impact on unemployment. Despite the fact, that many households see that owning a car is an investment for finding a job and hence increase employment, they proved that higher loans lead to higher unemployment due to the vacancy posting effect. There is limited research available on the relationship between debt and employment in European markets. Acemoglu (2001) provides the baseline for this literature. Their conclusion was that credit market distortions, although are not the major factors, play a role in European unemployment. This falls in line with our hypothesis. Looking at labour supply, however, we expect that overdue debts lead to lower supply for registered jobs as, due to the expected deductions in wages, employees would face lower effective wages leading to decreased labour supply.

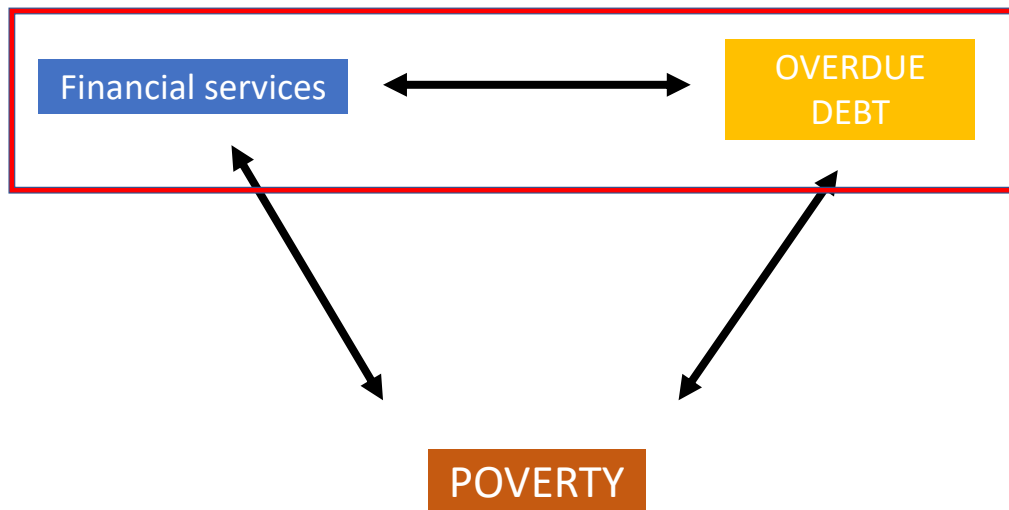
There are also studies that mentioned both directions of causality between employment and debt but did not address the voluntary choice of staying out of the labour market and none is focusing on long-term overdue debt. Karacimen (2015)’s results proved the two-way direction between metal industry workers’ debt and wage employment. On the one hand, if there is an insecurity with regards to employment and wages, workers are more encouraged to borrow. On the other hand, having debt will discipline the employment relations, similarly to Kim et al. (2018), who argued that household indebtedness leads to further income inequalities by reducing the bargaining power of the indebted on the labour market.

We focus also on a labour supply in Hungary and find that, due to hiding from debt collection, employment decreases Our analysis and results will be introduced in the following chapters.

3.2.3. Debt and financial exclusion

In this section, we look at the literature on the relationship between financial inclusion and overdue debt (Figure 6).

Figure 6: Relationship between financial inclusion, overdue debt and poverty



Source: own research

Note: There are three impact lines between financial inclusion, overdue debt and poverty: first, there is a relationship between financial inclusion and overdue debt, second, there is a relationship between financial inclusion and poverty, and third, there is a relationship between debt and poverty

Extensive literature describes the relationship between financial inclusion and debt. Gosztonyi and Havran (2021), for example, focused on poor households in disadvantaged regions of Hungary, who take short-term bank loans to cover their needs. They found that the social environment and short-term borrowing have a direct impact on access to finance. They also showed that these short-term loans can turn into problem debt, if borrowers try to maintain their standard of living and that the problem debt will lead to enhanced financial exclusion of the society these borrowers live in.

As described at the beginning of this chapter, and from the point of view of our research, we derive expectations on the relationship between long-standing overdue debt and financial inclusion based on the relationship between financial inclusion and debt and debt problems.

It has been proven that financial inclusion may increase the debt stock (Fitzpatrick 2015; Nam and Loibl 2021) and may increase over-indebtedness (Gloukoviezoff 2011), and as an extreme situation can lead to overdue debts. In the meantime, there has been some mentioning (Anderloni and Carluccio 2006; Gloukoviezoff 2007; Fanta and Makina 2019) or a more indirect (Krumer-Nevo et al. 2017) recognition of a two-way impact between financial inclusion and debt, but limited research focused at the reverse impact between financial inclusion and debt.

Fanta and Makina (2019) concluded that over-indebtedness is one of the unintended consequences of financial inclusion. Statistically, they aimed at proving the relationship between over-indebtedness and poverty by focusing on the explanatory factors that lead to over-indebtedness. They found that over-indebtedness worsens poverty rather than helps to suggest reviewing policies and promoting responsible lending. We look at the situation where the extreme situation of over-indebtedness is a given: the examined households have long-term overdue debt, which may have been the result of irresponsible lending and borrowing (Cherednzchenko and Meindertsma 2019) (one extreme example is the Hungarian FOREX loans as described by Berlinger and Walter 2013; Berlinger and Walter 2015; Bodzási 2019) but can be a result of unexpected shocks faced by the households or individuals (loss of job, health issues, etc.). Fanta and Makina (2019) showed that there is a relationship between poverty and over-indebtedness and that there is a spiralling effect between poverty trap and financial exclusion.

Anderloni and Carluccio (2006) highlighted three possible links between over-indebtedness and financial exclusion. First, there are individuals who face over-indebtedness after their decision to enter indebtedness due to external reasons, such as loss of job, health issues, family crisis, etc. and therefore their disposable income radically falls. These individuals find it difficult to access financial services products. Second, difficulties to repay debt can cause financial exclusion due to reduced creditworthiness, which can further spiral into exclusion from utility and telecommunication services or even from being employed. Third, the policy tools to address over-indebtedness and its most extreme, irremediable situations are the same as addressing financial inclusion. We argue that there is a fourth link, which combines the first and the second link with a behavioural element. In this case, individuals, who have already been in the situation of having long-standing overdue debt (probably because of the situation described in the

first- or the second- link), but it is their own choice to stay away from financial services in order to maximise their disposable income.

Anderloni and Carluccio (2006), as well as Gloukoviezoff (2007), raised that there is also a reverse relationship between financial inclusion and overdue debt, which we can describe as the ‘overindebted financial inclusion paradox’. This means that without financial inclusion, it is less likely that someone is becoming a debtor, whilst at the same time having debt may also lead to financial exclusion. Krumer-Nevo et al. (2017) stated that debt can impact financial inclusion based on the decision of the debtor, especially when their debt payment to income ratio is high.

From the literature, it appears that indebtedness, over-indebtedness and particularly overdue debt has not yet been closely examined as potential variable explaining the changes in the level of financial inclusion or rather the financial exclusion. We, however, show that overdue debt has an implication on voluntary financial exclusion.

Krumer-Nevo et al. (2017) described and Salignac et al., 2016 recognised forced and voluntary financial exclusion. We can describe forced financial exclusion as denied access to financial services due to the supply side (Hajilee et al. 2017), amongst others due to the institutional infrastructure and the lack of access to financial products (Muir et al. 2017; Birkenmaier and Fu 2018; 2019, Fernández-Olit et al. 2018, Bermeo 2019, Caplan et al. 2020), due to the additional conditions attached to the financial products, due to financial regulatory requirements (Kodongo 2018; Duvendack and Mader 2019), due to higher prices offered on these products and services or due to other discriminatory market measures (Devlin 2005; Sinclair 2013; Devlin et al. 2014; Marston and Shevellar 2014; Burton 2017; Fernández-Olit et al. 2019; Sha’ban, Girardone and Sarkisyan 2020; de la Cuesta-González et al. 2021). Ozili (2020) finds that financial inclusion has an impact on and are affected by the supply-side factors, such as financial innovation, the stability of the financial sector, the state of the economy and regulatory frameworks highlighting the endogeneity of financial inclusion, which is a key element of our research.

Voluntary financial exclusion is based on the borrower’s own decision and hence related to the demand side of financial services. Individuals and households can decide on self-exclusion (Anderloni and Carluccio, 2006) due to the feeling that they are not able to cope

with the financial services providers or because they believe the available financial services products are not fit for their needs. In our analysis, we are focusing on voluntary financial exclusion not due to psychological impact or mental state (belief), but rather due to a rational economic decision made in relation to overdue debt: disadvantaged households need to secure their basic needs (Standing, 2017; Van Parijs and Vanderborght 2017) and hence they decide not to have a bank account to avoid the deductions because of the overdue debt.

These voluntary choices can be explained by the asymmetry caused by the shadow economy. Hajiliev et al. (2017) for example looked at the impact of shadow economy on financial inclusion in emerging countries. They found that - between countries - the shadow economy creates a short-term, asymmetric situation in financial inclusion, which latter is driven by real income (i.e., by the non-shadow economy). Based on their explanations, it is logical that individuals with long-term and paralyzing overdue debts would move towards the shadow economy and hence rather not participate in financial services. Similar to Hajiliev et al. (2017), we argue that poor households with long term overdue debt choose not to use basic financial services. However, our analysis focuses on the household's decisions based on household liquidity and not due to the asymmetry caused by the shadow economy, which, can be a consequence of these household-level choices.

We hypothesize that there is an additional behavioural route based on hopelessness: avoiding any way of deductions to increase the available financial resources for financing basic needs. We argue that when there is access to these financial services, due to the low-level socio-economic situation and particularly due to problem debt the individuals choose for voluntary financial exclusion.

3.2.3.1. Debt and bank account

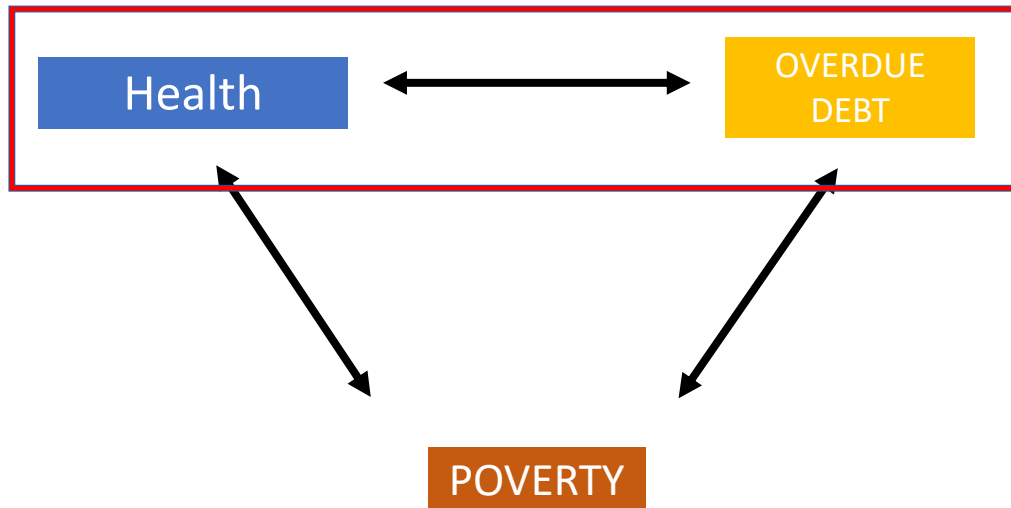
Out of the three approaches of financial exclusion, namely access to, use of, and perception about financial services and products (Anderloni et al. 2008; de la Cuesta-González et al. 2021), we focus on the use of financial services describing it with one typical indicator, whether the individual has a bank account or not. The reason for choosing this indicator is simple, this variable was available from the database. Besides, according to Sha'ban, Girardone and Sarkisyan (2019), the most common measure used

for describing financial inclusion – at country-level analysis - is the proportion of adults that have an account at a financial services provider (Honohan 2008; Rojas-Suarez 2010; Demirgüç-Kunt et al. 2013; Illyés and Varga 2015; Allen et al. 2016; Owen and Pereira 2018; Horn and Kiss 2019). Krumer-Nevo et al. (2017) conducted a survey in Israel between poor individuals to examine the nature of their debts, the strategies they use to cope with debt payments and the obstacles they face. They flagged up that 61% of their 142 interviewed individuals had overdue debt and 21% of those did not have a bank account. Some researchers argue that the ownership of a bank account on its own is not providing a comprehensive measure of financial inclusion or exclusion. Honohan (2008) for example found that the correlation between owning a bank account and the banking depth is very low (0.32) and thus the ownership of the account and the concept of using the account should be separately addressed. Allen et al. (2012), Chan (2017) further refines the concept by using two additional indicators besides bank account ownership to describe financial inclusion, namely the use of the account to save (which can be initiated both by the account holder or by someone else) and the frequency of using the account by looking at the number of withdrawals (which action is assumed to be initiated by the account holder only).

Based on Kempson et al (2000); Devlin (2005); Fitzpatrick (2015) and Krumer-Nevo et al. (2017), who found that not having a bank account leads to a higher risk of financial exclusion and of piled-up problem debt, we argue that using the bank account as a single indicator is a sufficient measure indicating financial inclusion/exclusion, even though due to its restricted scope it may include bias. We show that overdue debt discourages the willingness of borrowers to open a bank account due to the fear of debt collection.

3.2.4. Debt and health

Figure 7: Relationship between health, overdue debt and poverty



Source: own research

Note: There are three impact lines between health, overdue debt and poverty: first, there is a relationship between health and overdue debt, second, there is a relationship between health and poverty, and third there is a relationship between overdue debt and poverty

In this section, we focus our literature review on the relationship between debt and mental health as well as between debt and physical health (Figure 7). In terms of literature development, we find that studies in the last two decades multiplied in this area with a particular focus on mental health. Literature giving evidence on the existence of a relationship between debt and health provides the basis for the discussion between researchers. Later, researchers were conducting analyses to prove that debt is a cause of health problems. Most recently, we experience that there is evidence for reverse causality and arguments are built up to show that the bi-directional causality can lead to a negative downward spiral leading to a poverty trap.

Although many studies were conducted on the relationship between socio-economic status and health, until the beginning of the 2000s, debt was not seen as a factor to explain health issues. Drentea and Lavrakas (2000), based on a representative dataset of 900 adults from the US, showed that there is a link between credit card debt and stress related to debt on the one hand and health issues on the other hand. They also found that this relationship is partly explained by health risks and health behaviours (e.g., excessive

smoking, alcohol consumption, obesity). Adams et al. (2016) added that perceived stress is the mediation link between financial strain and psychological symptoms as well as academic and social integration. Sweet (2020) found that skipped medical care and skipped consumption due to debt can also be a mediator in deteriorating health issues.

Further studies also looked at the descriptive relationship between debt and physical and mental health, such as Wagmiller (2003) and Bridges and Disney (2010), suggesting that debt may explain some of the relationships between socioeconomic status and health. Kempson, et al. (2004) and Sweet et al. (2013) suggested that families in debt are associated with psychological, physical, and family issues. Brown et al. (2005) added that the association between debt and psychological well-being is significantly stronger at the individual level than at the household level. They examined British household heads who have debt, other than housing loans. They found that those who have a higher level of debt reported decreased psychological well-being. Kim and Chatterjee (2019) and Greenberg and Mogilner (2020) found that student loan debt in the US was also negatively correlated with well-being.

Further studies were conducted on the correlation between debt and depression (Bridges and Disney 2010; Berger, Collins and Cuesta 2016) debt and anxiety (Drentea, and Lavrakas 2000; de Bruijn and Antonides 2019; Magwegwe 2020; Hiilamo and Grundy 2020) and debt and mental disorders (Fitch et al. 2011; Richardson, Elliott and Roberts 2013). Amit et al. (2020) concluded similar relationships for Asia based on a systemic literature review of the topic. Berger, Collins and Cuesta (2016) looked at the relationship between depressive symptoms and household debt in the US. They found that the relationship is driven by short term debt, but they have not found convincing evidence that mid-and long-term unsecured debt have a similar impact. The relationship proved to be strong in the older but still active age group between 51 and 64 years, with no higher education degree and also for those who did not have a stable family situation (e.g., in divorce, etc).

Krumer-Nevo, et al. (2017) highlighted that the most extreme, and fatal form of mental distress is suicide. Yip et al. (2007) drew attention to the fact that out of the 1088 suicide committed in Hong Kong in 2002, 24.5% were debtors. 60% of the deceased piled up their debt within one year and 12% had long-term debt for at least five years. A similar relationship was indicated by Hintikka et al. (1998); and Pridmore and Reddy (2012).

Meltzer et al. (2011), based on a random probability sample of 7461 respondents in the UK and based on interviews, looked at the reasons for suicidal thoughts. They found that personal debt – the number of loans, the type of loan origin, and the reasons for taking out a loan - is associated with mental health. Those who had debt were twice as likely to think about suicide than those with no debt. Although the authors were cautious to state that they had evidence of the causality between debt and suicidal thoughts, the fact that they proved that the relationship between the two is bridged by feeling hopeless suggest the causality in this direction. Lester (2020) suggested that there is a correlation between student debt and suicide.

It has been a long-proven fact that mental distress has a negative impact on physical health (Vaillant 1979; D'Andrea et al. 2011). Physical disorders were captured when researchers looked at the impact of debt, amongst others obesity, high blood pressure, muscular pain; sleep deprivation, (Drentea and Lavrakas 2000; Keese and Schmitz 2014; Ochsmann et al 2009; Sweet et al. 2013; French and McKillop 2017; Sweet et al. 2018; Warth et al. 2019a; Warth et al. 2019b; Guariglia et al. 2020).

Besides mental and physical health, debt also has an impact on the dynamics between family members and therefore will influence the family composition and family status. Dew (2008) and Cai et al. (2020) found that household debt – other than housing loans - has a negative impact on marital satisfaction in Malaysian households. Kempson et al. (2004), Dew (2011) and Hill et al. (2017) concluded that a higher level of indebtedness is associated with a higher likelihood of divorce. Financial distress can also hinder the relationship with their children and control over mental and physical well-being (Goode 2012; Brewer 2020).

Richardson, Elliott and Roberts (2013) examined 65 studies and papers to conduct an analysis on the relationship between personal unsecured debt and mental and physical health. Based on their literature review, they concluded that some studies focused on specific populations, but did not address particularly disadvantaged or low-income families. According to their summary, most papers are looking at the impact of debt on depression. Some analysed the impact based on self-rated health status. Debt also shows a strong relationship with drug and alcohol abuse, but no significant relationship with smoking. Most of the studies found that there is a significant relationship between debt and worsening health, but causality remains difficult to prove.

We have seen that indebted households and individuals are more likely to have wide-ranging health and family issues. Most recent research further looked into the possibilities to find quantitative evidence for the causality between debt and physical- and mental health.

Mewse et al. (2010) found that debtors are more pessimistic and have reduced financial self-assurance and decreased economic self-control. Debtors with overdue debt also expressed that they feel stigmatised and identified as part of a problematic group of society. Selenko and Batinic (2011)'s study analysed the link between financial strain and mental health more closely based on data collected among 106 individuals in Austria with financial strain. Individuals, who were close to bankruptcy was the best predictor for mental distress, which was also moderated by veiled benefits coming from work. However, employment status did not prove to be a significant factor here. This can be interpreted as no matter what type of work there is (even if it is taken on the shadow market). The authors concluded that relative financial distress is a good predictor of mental distress.

Keese and Schmitz (2014) examined the German Socio-Economic Panel between 1999 and 2009 and aimed to find proof for the causality between over-indebtedness, health satisfaction, mental and physical issues. They recognise that there is a clear endogeneity problem between health and debt variables, but they focus their research on the impact of debt on health. The authors measured over-indebtedness in two ways: debt servicing ratio for consumer and housing loans and as a binary variable indicating if the household in question is defined as overindebted or not. They found that regardless of the debt measure they use, debt shows a strong correlation with health satisfaction, mental health and obesity.

Hojman et al. (2016) examined also the relationship between debt trajectories and mental health particularly focusing on depression. They found that depressive symptoms are higher for those who have been in long-term indebtedness. They also proved that those who are moving from not being overindebted towards over-indebtedness are also showing more depression symptoms. On the other hand, they found that depression disappears when overindebted households move towards a moderate debt situation. Interestingly, they also found that the dynamics between over-indebtedness and depression is driven by

non-secured debt and mortgage payment arrears, but similarly to Brown et al. (2005), they found no evidence of such link for mortgage loans.

Tay et al. (2017) analysed the relationship between debt and subjective well-being (SWB) in the US and found that household debt accounts for up to 40% of the variation in life satisfaction.

Liu, Zhong, Zhang and Li (2020) examined the impact of household debt on self-perceived happiness in China. They found that the level of total household debt has a direct impact on the household's happiness and that risk attitude is an important explanatory factor to happiness. They also found that the type of the debt and the source of the debt makes a difference. Housing debt and student loans (or loans taken for education) and loans taken from outside the banking sector have a stronger negative effect on happiness.

Kourouklis, Verropoulou and Tsimbos (2020) looked at European countries and examined the impact of income and wealth with regards to depression. In Central Europe the impact was stronger on mental health and income representing liquidity proves to be more important than wealth. Similarly, López-Casnovas and Saez (2020) looked at the role of income and wealth in Spain, but they found that both factors may be equally important depending on age and individual behaviour.

Batomen, Sweet and Nandi (2021) found that – in the US - besides the mounting evidence for the link between the two variables, household debt in excess of wealth partly lead to social inequalities and causes physical health conditions such as heart disease or diabetes.

Although attempts were made to prove that household debt problems lead to mental and physical issues and deteriorate the subjective well-being of households and individuals, question marks still remain regarding the direction of the causality, especially in light of further research which raises the possibility of a two-way impact between debt and health.

Krumer-Nevo et al. (2017) emphasised that households not only face psychological, medical and relationship-related repercussions due to their debt situations, but these health factors seem to convolute with other social inclusion factors, which in turn will

create a further impact on household debt, therefore leading to a negative spiral and finally to a debt trap.

Ntsalaze and Ikhilde (2016) and Hyytinen and Putkuri (2018) claimed that too optimistic borrowers will end up in higher overdue debt. This borrower's behaviour can be interpreted as a sign between mental state and debt increase. During our research, we found that this is a less important dynamic addressing the poverty trap for households who are already in the state of persistent over-indebtedness.

Mahoney (2015) and Gross and Notowidigdo (2017) examined the availability of health care on bankruptcy. It should be noted that in the US, markets bankruptcy is a commonly known debt relief institution, a „*legal procedure designed to forgive debtors their debt*“. They conclude that eligibility for healthcare is reducing bankruptcy filings and that out-of-pocket medical costs are pivotal in roughly 26% of personal bankruptcies among low-income households. If we assume that filing bankruptcy is an „extreme“ case of over-indebtedness (Sullivan et al., 1999), bankruptcy is „*financial death*“, we can interpret their findings with reverse causality and conclude that mental and physical health issues have an impact on over-indebtedness. In our research we investigate the impact of overdue debt on the individual's health accepting that it can end in a negative debt spiral, also looking at the indirect impact, and not through earnings.

Some research addressed the impact of health on debt by defining health issues with medical costs. Sullivan et al. (1989) based on personal stories and data available examined medical costs as a variable describing health issues. Health issues were defined broadly, including alcohol problems, drug addictions, etc. and they include both mental and physical health indicators. Himmelstein et al. (2009) looked at the impact of illness and injury on filing bankruptcy and found that there is a significant and strong relationship. Dranove and Millenson (2006) worked with a more narrowly defined health cost and concluded that the estimated impact of health on bankruptcy is less dramatic, but still, 17% of bankruptcy causes are still medical cost-related, which is an overwhelmingly greater proportion in low-income households.

Gathergood (2012) analysed individuals having problems repaying their mortgage debt also face psychological health issues. But most importantly, he indicated that there is a two-way causality between psychological health and debt issues.

Ong, Theseira and Ng (2019) argued that the poverty trap is developed due to income factors and psychological problems. The authors formulated a hypothesis that chronic debt leads to negative psychological consequences and deteriorates decision making, hence contributing to poverty trap. They believe that borrowers look at chronic debt which is not substitutable and hence it takes up an enormous amount of mental capacity thus restricting decision making. They examined the impact of an unanticipated but compared to the households' income large debt-relief program on mental functioning and on decision making. The debt relief was a charity corresponding to roughly three months of household income in low-income terms. They compared 196 beneficiaries in two instances: once before the debt relief was made and once after with a control variable for the amount of the debt relief received. There was a variation in decision making. For the same dollar, some repaid their debts, others paid back less. The authors found that an additional debt account paid improved significantly the cognitive functioning and reduced anxiety. On the magnitude of the payment, they found that roughly one month of income worth relief would lead to a debt down-payment, whereas the magnitude did not have an impact on anxiety and decision making. Similarly, to Ong, Theseira and Ng (2019) we are also looking at households with "*chronic debt*", expecting to show the impact on health.

3.3. Debt relief programs

In the previous chapters, we saw that poverty is key to addressing social inclusion and that poor households approach decisions regarding their households and individual finances in a different way (e.g., present-bias, early reproduction, hidden talent and skills due to scarcity) than households not living in poverty. This different behaviour can be rational if we accept that the circumstances of poor households are different. We also saw that poverty is embedded in social inclusion and both are multi-dimensional, affecting people's lives and decisions through different and various channels. The different dimensions overlap, causality is two-way creating a poverty trap. If we accept that overdue debt has longstanding implications on the life of the individual, households throughout generations and taking into account the spiralling effect on the entire economy, we find it important how to address this matter on a policy level. What would happen if we helped households to renegotiate their overdue debt? Do we need to help or not? Or rather, how can we help? Are the debt relief programs sufficient?

Piketty (2014) examines basic facts on the long-term trend of income and wealth in Europe and in the US. Piketty reveals significant changes in income inequality. A market economy based on private property *“if it is left to itself, contains powerful forces of convergence, associated in particular the diffusion of knowledge and skills; but it also contains powerful forces of divergence, which are potentially threatening to democratic societies and to the values of social justice on which they are based on.”* (Piketty 2014, p. 57). Based on his model, inequality between those who have income from wealth compared to those who have not will increase if the returns to wealth are greater than economic growth. One of his conclusions was that it is important to step in and take into account the interests of the least well-off too, especially in case of decelerating economic growth.

Auclert et al. (2019) supported that debt relief programs may be necessary and beneficial for the borrower, the lender and the society underlining that on macroeconomic level bankruptcy debt relief programs lead to a stabilisation of employment levels during the great recession and that more generous debt relief programs were more successful in this regard.

Krugman (1988b), Husain (1993) and Hart and Moore (1998) argued that voluntary, market-based debt reductions can be Pareto-optimal, hence beneficial both for the lender and the borrower. It would create value at a social level, too, as it would increase employment, whiten the economy, and improve the physical and psychological health of debtors.

The two main economic arguments against a debt relief program are that it costs too much and increases moral hazard (Tirole 2006; Fudenberg and Tirole 1990), or in other words, softens the budget constraint of all existing and potential borrowers (Kornai 1998; Kornai, Maskin and Roland 2003). Sachs (1990) mentions an additional problem as well, referring to those free-rider banks that profit from other banks' voluntary debt reductions. This can also be a reason why, in a competitive environment, debt reductions are less than the social optimum would suggest.

According to Stiglitz (2014), Berlinger and Walter (2015) and Barr (2020) income-contingent repayments could solve most of these problems, but it would require the involvement of the national tax authority to monitor individual incomes.

Krugman (1988a) suggests that financing debt and forgiving debt is a trade-off decision. He introduced the so-called “debt relief Laffer-curve” pointing to the fact that based on the circumstances (i.e., based on which side of the curve the debtor is), the reduction of the debt may lead to increased income of the lender by improving the incentives. Following this logic, the World Bank (2012) stated that debt waivers (e.g., partial reduction of the debt) can increase the debt income of the creditor, whilst at the same time can increase the standard of living of the households, thus incentivising financial inclusion of the vulnerable part of the society. The World Bank’s analysis is particularly important from our point of view, as it is focusing on the most vulnerable part of the society in Central-Eastern Europe, the Roma society recognising the diverging circumstances both at a geopolitical and ethnic level. Similarly, Agarwal et al. (2017) found that the 2009 home affordable modification program for renegotiating mortgage loans brought the lower rate of foreclosures and consumer debt.

Kanz (2016) analysed the biggest debt relief program in history and its impact on – amongst others - the balance sheet, investments, consumption of household individuals running agricultural microenterprises in India with a regression discontinuity design (RDD). He found that the debt relief program has not brought the expected positive outcome. In line with the moral hazard theories (Kornai 1989; Fudenberg and Tirole 1990; Tirole 2006) the impact of the debt relief is negative on the household’s financial behaviour, it accelerates informal lending and mutes the reputational concerns of future defaults. Households who were “saved” increased their informal borrowing whilst at the same time their productivity and investments have decreased compared to debtors who have not received debt relief.

In line with Krugman (1988b)’s conclusions, the outcome of debt relief may depend on the circumstances, Mukherjee et al. (2019) also looked at the same debt relief program as Kanz (2016). They found that those debtors who ended up in debt overhang due to exogen factors (i.e., not due to their own faults, but to unexpected weather changes), increased their standard of living and became better performing borrowers with the help of the debt relief than those who have not received any credit waiver. Poor people struggling with

their Swiss franc originated debts in Hungary can also be considered as victims of external shocks (devaluation of the Hungarian forint) and of the irresponsible and aggressive lending practices of the banks (lending without proper risk assessment). So, the question can be raised if in their cases, a debt relief program might also have positive and long-lasting effects as Mukherjee et al. 2019 demonstrated.

Dobbie and Song (2017) and (2020), and similarly to Mukherjee et al. (2019) showed with a randomized and controlled trial (RCT) that the different debt relief tools used (different treatments) will lead to different effects of the debt relief program. They analysed the impact of debt relief related to credit card debt on a controlled experiment based on randomly selected borrowers in the US. The debt relief was constructed as a mixture of immediate reductions in debt payment and a delay in interest write-downs, the former addressing short term liquidity issues and the latter targeting long-term debt constraints. The authors found that the long-term debt relief instrument improved the financial situation of the debtor and incentivised employment, surprisingly despite the fact that the debt relief itself would take effect only years later. At the same time, they could not identify similar improvements in financial and economic inclusion based on short term debt relief instruments. Dobbie and Song (2020, p. 987) found that for the high-debt borrowers, the probability of finishing a repayment program increased *„by 4.4 percentage points (30.8 per cent) and decreased the probability of filing for bankruptcy by 3.5 percentage points (33.3 per cent). The probability of having collections debt also decreased by 1.2 percentage points (3.1 per cent) for these high-debt borrowers, while the probability of being employed increased by 4.2 percentage points (5.1 per cent)“*.

Ganong and Noel (2020) also looked at the impact of short-term payment without change in long term liquidity and maturity extensions with an impact on liquidity of the households. They conclude that long term liquidity is the driver of borrower default and consumption decisions and hence suggests distressed debt restructuring. However, interestingly, they detected no impact in case of borrowers in default. The positive impact of long-term liquidity related policies was also shown by Eberly and Krishnamurthy (2014) and Haughwout, Okah and Tracy (2016) focusing on housing loans.

Dobbie and Song (2017) focused on financial distress, which is quite common in the US. At least 10% of Americans would file for bankruptcy during their lives and in general, Americans are liquidity constrained. This latter is true for our observed individuals too,

but there is a significant difference in the cultural aspect of European- and even more of Hungarian financial distress. Dobbie and Song (2017) underline that there are distortionary effects of debt overhang (long-term financial constraints) and that the impact of debt relief programs targeting the long-term concerns is underestimated. Dobbie and Song (2015) particularly looked at the impact of bankruptcy filings in the US and found that it increases the annual earnings of debtors (by over 5500 dollars), decreases five-year mortality (by 1.2%) and decreases five-year foreclosure rates. Dobbie and Song (2015) also found that foreclosures also decreased by 19.1 percentage points.

Dobbie and Song (2020) looked at a large-scale debt relief program. They randomly chose borrowers and examined the impact of short-term debt reductions which had an immediate impact on the borrowers and long-term write-offs which only had an impact in three-five years. They found that long term debt relief had a significant impact on financial inclusion and on employment. Dobbie and Song (2020) examined overdue credit card loans, whereas we look at a broader overdue due debt and include borrowing from banks, overdue tax and utility payments.

When it comes to the effectiveness of debt relief programs, some research underlines that debt relief programs can have a positive impact via different channels of social inclusion. As we saw, there can be a positive impact on financial inclusion (for example World Bank 2012; Agarwal and Klapper 2013; Agarwal et al. 2017; Mukherjee et al. 2019; Dobbie and Song 2020), on employment (for instance, Auclert et al., 2019; Dobbie and Song, 2020), on mental health (Ong et al. 2019) on the behaviour of the debtor (Ong et al. 2019).

3.4. Conclusions on the literature review

In light of the most recent policy goal on the European Continent to enhance social inclusion, we focus our attention on the disadvantaged regions in Hungary. In line with Levitas et al. (2007), Banerjee and Duflo (2007) and Saunders (2011), we address poverty through the social exclusion dimensions with a focus on employment, financial inclusion and bank account and physical and mental health of the borrower and their families.

Based on the literature, we conclude that the dimensions of poverty have a two-way relationship with overdue debt. We find it important to recognize that these dimensions have the potential to fertilize poverty trap, which provides new angles to the

interpretations of our results (e.g., Halleröd and Larsson, 2008; Banerjee, Banerjee and Duflo, 2011; Vaalavuo, 2016).

Individuals and households may end up in a poverty trap due to the consequences of a series of decisions that have proven to be rational behaviour under the circumstances they live in (Banerjee and Duflo 2007; Shah, Mullainathan and Shafir 2013; Gosztonyi 2017; as well as Pepper and Nettle 2017). Exiting the poverty trap at the same time, if possible at all, requires major efforts (Gennetian and Shafir 2015). Understanding the underlying reasons of developing poverty traps contributes to finding solutions.

Katona (1975) argued that poverty is a cause of building up debt, which remained in scientific research a commonly accepted phenomenon. In the meantime, research focusing on poor economics – although have not denied this phenomenon – started to see more into the relationship between indebtedness and poverty due to the identified multidimensional approach of addressing poverty (Sen 1985), its links to social inclusion and the discovered economic dynamics of the poor (Banerjee and Duflo 2007). Only very recently started researchers to focus on analysing the ‘other side of the same coin’ by looking at the causality from indebtedness towards poverty (Ntsalaze and Ikhilde 2016). We investigate whether factors associated with poverty and over-indebtedness follow a spiral effect due to the two-way causality, which means that these factors can be equally a cause and a consequence between one and another.

Looking at the economic inclusion dimension, it has been a long-accepted phenomenon that labour market events the household is facing have an impact on demand, repayment of debt and the stock of problem-debt (Kempson et al. 2004). Most research focused on the macro-economic consequences of this impact and addressed the dynamics of this relationship (Mian and Sufi 2014) from a labour demand perspective. In recent years, there has been a trend that the direction of the causality between employment and debt may be reversed as well (Dobbie and Song 2017). Later, researchers started focusing on the causal effect of debt on employment via labour demand (Mian and Sufi 2014 and Verner and Gyöngyösi 2020) as well as labour supply (Bernstein and Struyven 2017; Bernsetin 2017; Herkenhoff 2019; Dobbie et al. 2021 and Berlinger, Dobránszky-Bartus and Molnár 2021b). The majority of the latter papers focus on the impact of overdue debts (Herkenhoff and Ohanian 2011; Auclert et al. 2019) and credit information on employment decisions. Most recently, we see research on debt overhang and its

implications on labour supply, mainly addressing mortgage market debts (Donaldson et al. 2019; Apergis et al. 2020). From the literature, we conclude that there is bi-directional causality between debt and employment.

On the one hand, extensive literature is available related to the impact of financial inclusion on economic factors including the amount of debt. There is also extensive literature on explanatory factors of financial inclusion (Demirgüç-Kunt and Lyman 2012; Ozili 2020). On the other hand, there is scarce research on the impact of overdue debt on financial inclusion (Gloukoviezoff 2007; Krumer-Nevo et al. 2017; Fanta and Makina 2019; Fernández-Olit et al. 2019). More research shed light on the characteristics and consequences of financial inclusion when it comes to emerging economies and distressed societies, but there is a lack of empirical research on how overdue debt affects financial inclusion in case of distressed households and individuals (Krumer-Nevo et al. 2017). There is literature on the reasons for voluntary financial exclusion (Anderloni and Carluccio 2006) of households and individuals to secure basic needs, but so far no research examines the strategy of '*hiding from debt collection*' (Berlinger, Dobránszky-Bartus and Molnár 2021b).

On the link between household debt and mental and physical health issues, an extensive number of studies were delivered in the last decades (e.g. Bridges and Disney 2010; Sweet et al. 2013; Krumer-Nevo et al. 2017; Ntosalaze and Ikhilde 2016). However, there is no overwhelming empirical evidence on the direction of the causality between these factors (Keese and Schmitz 2014). We would like to strengthen the literature on this account and fill the gap by providing empirical evidence related to the impact of overdue debt on health issues. We saw that a vast amount of research either focuses on mortgage loans or secured loans due to the accessibility of data (e.g., Gathergood 2012). At the same time, research also found that secured debt has a reduced or no impact on health issues (e.g., Brown et al. 2005; Hojman et al. 2016). Our research medicates this controversy by defining debt problems with any type of formal overdue debt, which could implicate deductions from the non-performing borrower.

Based on the literature, when examining poverty trap through social exclusion dimensions, we conclude that policymakers should act to ensure the social inclusion of the disadvantaged part of the society. Researchers' conclusions on the effectiveness of debt relief programs are mixed. Depending on the circumstances of the debtor and the

creditor (Krugman 1988a and 1988b; Mukherjee et al. 2019; Dobbie and Song 2020), debt relief can lead to positive outcomes for both the borrower and the lender and for the society. The success of the debt relief program is dependent on the cost generated by moral hazard and spill-over effects (Kornai 1998; Tirole 2006). Introducing income-contingent repayments may be beneficial to contain some spill-over effects (Barr 2020; Stiglitz 2014, and Berlinger and Walter 2015) with additional administrative costs.

3.4.1. Filling the gap

There is a gap in the literature on analysing the possible impact of turning non-performing debt into performing debt, especially for households living in a disadvantaged neighbourhood. Our research aims at analysing the impact of overdue debt on employment, bank account and physical and mental health of the borrower and his/her family and therefore provide the basis for a better understanding of what policy tools can or cannot work to enhance social inclusion.

There is extensive research on debt relief programs and their economic and social value. However, there is restricted research available that gives the basis for the state to step in not only for efficiency reasons (i.e., addressing externalities) but also for moral purposes (pillories are unacceptable in modern societies).

There is a gap in research on the direct impact of overdue debt on employment. There is also limited evidence available underlining the direct impact of household overdue debt on labour supply. Work in this area mainly addresses the impact of corporate debt on unemployment or the impact of household debt on unemployment indirectly via the vacancy posting effect. There is also a lack of analysis on the impact of overdue debt in financially disadvantaged households. However, due to their circumstances, they require a different approach when it comes to addressing over-indebtedness and hence their social inclusion (Halleröd and Larsson, 2008).

Financial exclusion is a well-researched area, especially in the US and UK. Still, some vulnerable groups such as rural inhabitants are completely neglected (Fernández-Olit et al. 2019), overdue debts do not receive enough attention (Krumer-Nevo et al. 2017), and researchers do not ask unbanked people directly (Koku 2015). Our study fills a gap in all three respects.

Regarding health issues, it is evident that there is extensive research conducted on the direct association between mental health and debt issues. There is significantly less analysis on the impact of household debt on medical health and hardly any on the impact of debt on the level of socializing. Our aim is to also fill this gap in research and therefore when we define health issues, we include indicators related to mental health, physical health as well as the level of socializing.

The most analyses focus on the US and the developing countries. Due to the lack of available comparable data and the cultural diversity of the EU, further empirical analysis on poor households and their finances prove necessary, especially in Central-Eastern Europe. Our research aims to fill this gap and provide an analysis that can contribute to the literature on the nature of poverty in the EU's Eastern bloc.

Our research addresses these research gaps in four ways when looking at the relationship between household overdue debt and employment in the context of financial inclusion. First, we are looking at any type of overdue debt (utility bills, bank loans, and tax liabilities), which can initiate a legal debt collection process (e.g., by deduction from income, etc.), as we would like to better capture the deterioration of household balance sheet. Second, we are looking at a new – so far not discussed - channel through which the overdue debt has an impact on employment decisions, namely the fear from debt collection. Third, given that the decision on employment is driven by the fear of debt collection, it means that debt has a direct impact on labour supply, having a bank account and the physical and mental health of the borrower. Finally, we are focusing our research on the most distressed households, which can be described by different behavioural and rationality traits.

4. DATA

For our research, we use qualitative and quantitative primary data based on a questionnaire. The first step of this research was to clean the raw data and build up the database for quantitative analysis. This chapter outlines the data collection process and the process of cleaning the data. We also give a brief description of the base variables in the available database, but the variables used for the empirical research are listed under the empirical analysis chapter. In this chapter, we also indicate potential shortcomings and limitations related to the database.

We have information on 504 households and 1,794 individuals, of whom 1,196 were of active age (18–65 years), 179 of whom had overdue debt. Each household had a legal age (older than 18 years) respondent. The sample is representative of non-urban households in the Hungarian Borsod-Abaúj-Zemplén county.

4.1. Data collection

With the aim of getting to know households' financial liquidity management in the rural settlements in one of Hungary's disadvantaged regions and to prepare for the survey-based data collection, 14 in-depth interviews were conducted in one settlement, Kázmárk, Borsod-Abaúj-Zemplén (BAZ) county. The shortest interview took 48 minutes the longest was 2 hours 19 minutes. The respondents were encouraged to speak freely and tell their stories. Guidelines were given to the interviewer to direct the discussion. Of the 14 interviewees, 10 were female and 4 were male. The interviews have been recorded and typed up. In compliance with the General Data Protection Regulation (95/46/EC) rules, the respondents gave their explicit permissions to record, document, and use the information they provided.

In order to collect targeted data, in March and April 2019, the Soreco Research Kft conducted a questionnaire-based survey on behalf of the Corvinus University of Budapest under the framework of the "Financial and Public Services" research project of the Higher Education Institutional Excellence Program. The research focused on the financial management of households in the small settlements of the Hungarian Borsod-Abaúj-Zemplén (BAZ) county which is one of the most disadvantaged counties in Hungary. Data were collected through personal interviews, via the so-called multistage stratified

random sampling procedure. Data were recorded by the interviewer, based on the adult age respondents' answers to the questionnaire.

Gosztonyi and Havran (2021), who analysed the same sample, showed that the sample is representative of non-urban households in the county. As Gosztonyi and Havran (2021) described, BAZ county has a fragmented settlement structure. They illustrated that the targeted settlements fall in line with the geographical location of those European districts where the number of households that are facing financial difficulties is higher. Gosztonyi and Havran (2021) highlight that household-level sampling is in line with the findings of Banerjee, Duflo (2007) according to which decisions regarding debt in disadvantaged settlements are usually taken at a household level. They also underlined that collecting data with the help of an interviewer via the survey ensured reliable data as residents of low-income rural areas are less likely to answer questionnaires in any format.

As described in detail by Gosztonyi and Havran (2021) sampling occurred in two stages.

In the first stage of the sampling procedure, the settlements to be sampled were selected and the number of households to be interviewed in each settlement was determined so as to reflect the proportion of the non-urban population of the county districts. Annex 2 lists the names of the 57 selected settlements and the number of questionnaires filled in.

In the second stage of sampling, the interviewers selected the households to be interviewed using a predetermined selection algorithm, the so-called random walk method. In other words, households were not selected based on a preliminary address list, but randomly as follows: in the given settlement there was a pre-recorded starting point. From this starting point, based on a fixed route algorithm, every fifth household was selected for interview. In each household, the household member most competent in financial matters was asked to complete the questionnaire. If the randomly chosen household refused to respond, the nearest household was contacted. Sampling was done anonymously, no personal data were collected, so households cannot be identified.

Based on the questionnaire, the following variables have been defined in the raw data. The Group of questions were based on demographic variables, the living environment at settlement level, economic and financial variables, wealth, and health.

4.2. Cleaning the raw data

The data was processed at two levels: household and individual. The raw data were coded based on the questionnaire. Then, we made data transformations to be able to use the dataset in a different format. Documentation on all transformed variables is available in Annex 1 indicating on which raw data variables the transformed variables are based and the related questions from the questionnaire as a reference point. From the raw data, in the first phase, i.e. in the household analysis, we identified (processed) 140 variables as a starting point. The number of available variables has increased as further transformed variables have been added to run the modelling. We calculated indicators as new variables based on the primary variables. Annex 1 gives an indicative list of the most relevant variables for our analysis as an example.

The processed variables can be scale or categorical variables. We define variables which are measurement variables as scale variables. Categorical variables are either ordinal or nominal variables. The former expresses a ranking, where also average values can be interpreted. With nominal variables, we define more categories or groups of observations.

When describing the variables, we grouped them according to their targeted information. We indicated the (minimum and maximum) values, mean, standard deviation, skewness and kurtosis where it has relevance. We also indicated if the variation around the mean is considered to be high. This we judge from the coefficient of variation (CV), which is calculated as the ratio of the standard deviation and the mean. If CV is greater than 1, the variation is considered high.

We used SPSS descriptive statistics and frequencies for the below description.

First, we ran a consistency check on the raw data. We have left all observations in the data set, which do not have a value (e.g., value is NA) either because the respondent could not give a response or because the question was not relevant to the given respondent/household. We screened all variables for the following and – if necessary - treated them as follows

- Value NA to be substituted by a numerical value
- Categories with low frequency to be integrated into other categories if possible.

For the outlier analysis in case of the scale variables, we used SPSS to explore and indicate the outliers under the description of the variables. SPSS is using the Inter Quartile Range (IQR) rule with a multiplier of 1.5 and 3, so SPSS indicates the observations as outliers if their value exceeds the value calculated as $\left(\frac{Q_3-Q_1}{2}\right) \times 1.5$, where Q_3 is the 75% percentile value, Q_1 is the 25% percentile value. The observation is indicated as an extreme outlier if the value of the observation exceeds the value calculated by $\left(\frac{Q_3-Q_1}{2}\right) \times 3$. Based on Hoaglin, Iglewitz (1987), the 1.5 multiplier = leads to mistakenly identified outliers as the value is not sensitive enough. On the other hand, multiplier 3 might lead to the inclusion of outliers. They suggest that the right multiplier should be around 2.2. Based on this, we applied a multiplier of 2.2 for all the variables. We indicated the number of those observations which are considered to be outliers under the variable descriptions. We considered that the extreme outliers identified by SPSS are outliers. In case of some variables, further filtering proved to be necessary to identify the outliers, as outliers from the perspective of the full dataset do not necessarily make sense given that some clusters of the households have significantly different characteristics. For example, the non-performing financial obligations only appear in the minority of the households. Any related variable will not necessarily qualify as an outlier if we look at only those households who have non-performing financial obligations, whereas it will qualify as an extreme outlier if we examine the full dataset. Therefore, we ended up with different conclusions on outliers under the filtered dataset. During the outlier analysis, if there was no value in the given variable (=NA), it often is indicated as an outlier. We have not taken into account these when concluding which observations are outliers, as the available data under the different variables are treated either by 1) excluding them from the dataset or 2) substituting these values the mean, median, or modus depending on the nature of the variable.

4.3. Variables

We can identify three types of variables based on the raw data:

- household variables,
- individual variables,
- respondent variables.

Data were recorded by asking 504 respondents based on a questionnaire. Some questions were targeting the characteristics of their household. The variables based on this type of information (such as the number of household members or the total income of the household) are variables that have the same values for all individuals living in the household. In this case, the 504 responses could be extended to the entire population of the database. Other variables gave information on all individuals living in the household (for example, the age and education level of the household members or their last month's salary). There were also variables that only provides us with information on the respondent (e.g. alcohol consumption or satisfaction with their health).

4.4. Ethical considerations and potential limitations

The data have been recorded anonymously, except for the in-depth interviews for which explicit permission has been given by the interviewees. The respondents were properly informed about the purpose of the data collection and consented to the process. Participation was voluntary. If the respondent did not want to answer, there was no forced response or suggestion to force an answer and no confidential personal information has been recorded. In this regard, the data collection followed the rules of ethical research.

However, some information on wealth and income may have discouraged the respondents, thus, they may have given biased answers due to the fear of societal disgrace or other consequences. For example, it may be considered to be shameful not to pay back personal debts; therefore, not or not all of the debt has been recorded. Similarly, some individuals are hiding from financial institutions in order to avoid forced debt collection, therefore, they are not willing to give all the information about their overdue outstanding debt. Further limitations of the database will be flagged up under chapter 6 with regards to the empirical analysis and its conclusions.

5. OVERDUE DEBT AS MODERN PILLORY – A THEORETICAL MODEL

In this chapter, we develop a theoretical model to derive a feasibility condition for market-based debt relief programs. We found that lenders have no interest to offer payment reductions if non-performing borrowers are few, have small debts, and are difficult to reach. In this situation, poor debtors serve better as deterrents, similarly if we put them into a pillory. Calibrating model parameters to poor households struggling with overdue debts in small villages of a disadvantaged rural region in Hungary, we show that this might be the case in our sample, too. As, in normal economic circumstances, private debt relief programs are typically not feasible, a state subsidy would be needed to consolidate the debts of the poor. State intervention can be justified both by positive externalities and moral considerations.

5.1. Model of debt consolidation

In Chapter 2, we explained in detail the background and described the literature related to our model which is inspired by Akerlof (1978), Tirole (2006), and Mukherjee, Subramanian, and Tantri (2019) and which aims at providing a possible answer to the question why lenders and borrowers fail to renegotiate toxic overdue debts.

Let us assume a population of borrowers who can be good or bad. The number of good borrowers is G , the number of bad borrowers is B . Good borrowers are identical, they pay 100% of their obligations P_G and the face value (capital plus accumulated interests) of each debt is D_G . Bad borrowers are also identical, they pay 0% of their obligations P_B , and the face value of each debt is D_B (while the fair price is zero). We assume that loans are structured as annuities, but maturities and interest rates can be different for good and bad borrowers. Hence,

$$D_G = A_G P_G \quad (1a)$$

$$D_B = A_B P_B \quad (1b)$$

where A_G and A_B are annuity factors that can be different for good and bad borrowers. Note that, in this model, there is a linear relationship between payments and debt values.

Lenders announce a debt consolidation program giving the opportunity of a fresh start for bad borrowers. The key element of this program is that a part $0 \leq \rho \leq 1$ of payment obligations is forgiven for all applicants. According to (1b) the reduction of payments ρ equals the reduction in the present value of the debts at the same time.

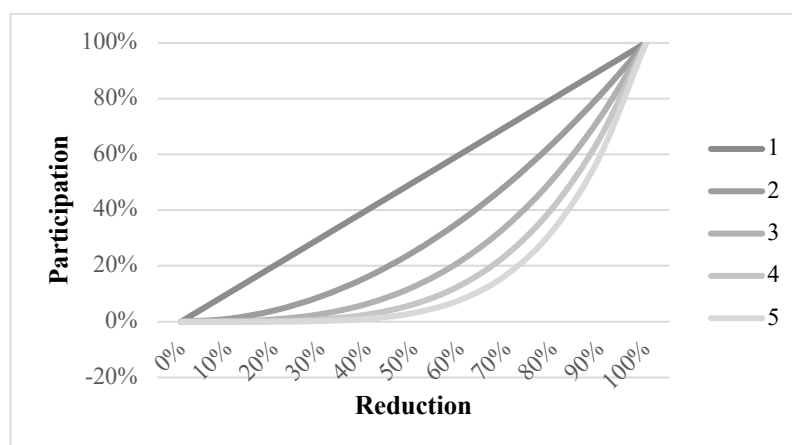
$$(1 - \rho)D_B = A_B(1 - \rho)P_B \quad (2)$$

Bad borrowers may benefit from entering the program even if they pay more, $(1 - \rho)P_B$ instead of 0, because being a bad borrower causes high personal costs (difficulties of hiding incomes, financial exclusion, bad feelings, social stigma, etc.). Thus, we assume that a per cent b of the bad borrowers decides to enter the program and then they pay regularly the reduced monthly payment without any delay. (They are motivated to do so as otherwise they lose the reduction and get back to the initial situation and they will be required to pay the total P_B .) The participation rate b depends on the price reduction ρ as a larger price reduction attracts more bad borrowers to enter the scheme:

$$b = \rho^k \quad (3)$$

where k is the reluctance of bad borrowers to participate as larger k values reduce participation b , see Figure 8.

Figure 8: Participation rate in function of the reduction



Source: Own calculations, Iuestionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Participation rates being convex in the reduction (hence $k > 1$) are more realistic because a small reduction does not trigger large participation. k depends on many factors ranging from macroeconomic conditions to the local culture, and personal attitudes. It can be

decreased by an effective marketing campaign (high participation) and increased by too many administrative burdens (low participation).

Such a debt consolidation program has an important side-effect that must be accounted for, too. A per cent g of good borrowers may find it attractive to become a bad borrower and enter the debt consolidation program and pay less than before. For the sake of simplicity, we set aside the time dimension of this process and assume that it can be done immediately. This is the manifestation of moral hazard or can be considered as symptoms of the soft budget constraint. Of course, becoming a bad borrower is not attractive for everyone. The degradation rate g depends on the price reduction:

$$g = \rho^l \quad (4)$$

where l is the reluctance of good borrowers to default. Like k , it depends mainly on the personal costs of being a bad borrower. Note, however, that here, we take the perspective of good borrowers, so l can be different from k .

A debt consolidation program is feasible if lenders gain more on the participation of bad borrowers (right-hand side) than lose on the degradation of good borrowers (left-hand side):

$$\rho g G D_G \leq b(1 - \rho) B D_B \quad (5)$$

Substituting (3) and (4) into (5) and rearranging the formula, we get

$$\frac{\rho}{1 - \rho} \rho^{l-k} \leq \frac{B D_B}{G D_G} \quad (6)$$

It follows from (6) that a larger reduction is possible if the relative size of the population of bad borrowers is large $\left(\frac{B}{G}\right)$, for example, in a large recession; their debts are relatively large $\left(\frac{D_B}{D_G}\right)$; the reluctance of bad borrowers to participate (k) is small; and the reluctance good borrowers to default (l) is large (since $\rho < 1$).

In practice, in normal economic conditions, debt consolidations tend to be marginal concerning both the number of borrowers and the loan amounts. The relative weight of

bad borrowers is usually small, their economic power is low, hence it is rational for the lenders not to save them but to use them as deterrents.

We can see from (6) that in the special case $k = l$, the reduction cannot be larger than the share of the good borrowers s_G debt within the total debt of the population:

$$\rho \leq \frac{BD_B}{GD_G + BD_B} = s_B \quad (7)$$

The intuition is that if bad borrowers are more reluctant to participate than good borrowers to default, the scheme cannot be profitable for the lender.

It is important to emphasize that in the above model, only private parties' (lenders' and borrowers') direct financial interests were considered. So, we derived the feasibility condition of such a scheme on a market basis.

Now, let us suppose that each bad borrower becoming a good borrower (paying the reduced amount of the debt) has a positive external effect on the society E_B in the form of enhanced employment and growth, more financial inclusion, and better health conditions. At the same time, society loses E_G on each good borrower becoming a bad borrower. Naturally, private parties do not calculate with external effects, the state, however, has an interest in realizing these externalities, for example by subsidizing debt consolidation. We can assume that the state subsidizes debt relief programs to the extent of the positive externalities, so lenders receive a direct state subsidy S in cash:

$$S = bBE_B - gBE_B \quad (8)$$

Hence, the feasibility condition (5) becomes

$$\rho gGD_G \leq b(1 - \rho)BD_B + S \quad (9)$$

Using (8), (9) can be rearranged to

$$\rho \leq \frac{BD_B + (BE_B - \rho^{l-k}GE_G)}{GD_G\rho^{l-k} + BD_B} \quad (10)$$

Clearly, such a state support can improve the feasibility of debt relief programs only if $(BE_B - \rho^{l-k}GE_G)$. A large number of bad borrowers B , a large positive difference in the externalities $E_B - E_G$, a large positive difference in the stickiness of good and bad borrowers, $l-k$ let a larger room for the state subsidy as good borrowers who pretend to be a bad borrower for a short period just to get a debt relief will enjoy the reduction without serious consequences on their everyday life.

This condition can be met by a lucky chance if parameters are properly aligned on their own. If not, it is up to the designer to successfully manipulate them, otherwise, debt consolidation is not possible. However, we saw in part 1 of this paper that

So, a debt consolidation program may have many positive external effects that are important for society (improving job market participation and growth, financial inclusion, the physical and mental health of people, etc.).

5.2. Calibrating the model

Parameters for our random sample representative for small villages in a disadvantaged region of Hungary can be found in Table 8.

Table 1: Model calibration

Good borrowers	Bad borrowers
$G = 740$	$B = 179$
$D_G = 508$ thousand HUF*	$D_B = 694$ thousand HUF
$P_G = 29$ thousand HUF per month	$P_B = 40$ thousand HUF per month
$GD_G = 375\,920$ thousand HUF	$BD_B = 124\,226$ thousand HUF
$s_G = 0.75$	$s_B = 0.25$

Source: Own calculations, questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

**There was no direct question in the survey on the debt of good borrowers, therefore, their average debt is estimated from D_B , P_B , and P_G using (1a) and (1b) and assuming that annuity factors A_B and A_G to be the same.*

To calibrate the above model, we consider the total population of borrowers composed of those adults in the sample who have formal loans (interpersonal and usury loans are excluded). 740 of them are good borrowers paying regularly and 179 are bad borrowers being in a delay of more than 90 days, most of them not paying at all. The average debts of bad borrowers are somewhat larger which can be due to accumulated default interests,

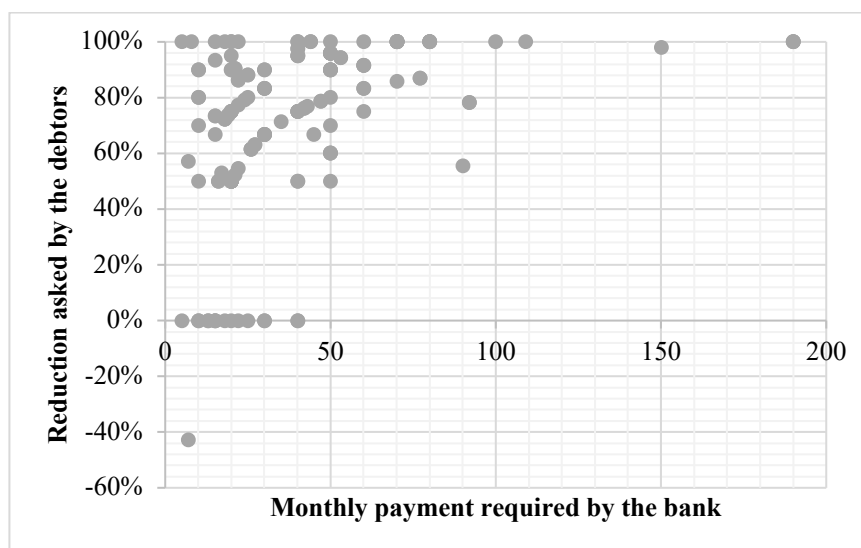
even though, the total debt portfolio of the good borrowers is three times larger than that of bad borrowers (weights are 0.75 versus 0.25), hence the right-hand side of (6) is $\frac{BD_B}{GD_G} =$

$$\frac{0.25}{0.75} = \frac{1}{3}.$$

It is more difficult to calibrate k and l characterizing the potential behaviour of bad and good borrowers, respectively. We have seen that if k and l are equal, then the maximum level of reduction is $s_B = 25\%$. If good borrowers are much more reluctant to participate in the scheme (hence to default first) than bad borrowers, for example, $l = 5$ and $k = 1$, then the reduction can be 65%. Moreover, if $l - k \rightarrow \infty$, then the maximum reduction approximates 100%.

We asked bad borrowers how much they would pay on a monthly basis to get rid of all their overdue debts. Based on their answers, we can calculate the average reduction ρ that would be attractive enough to enter the scheme. Figure 9 presents reductions requested by the debtors in the function of the monthly amount they should pay.

Figure 9: Reductions requested by bad borrowers



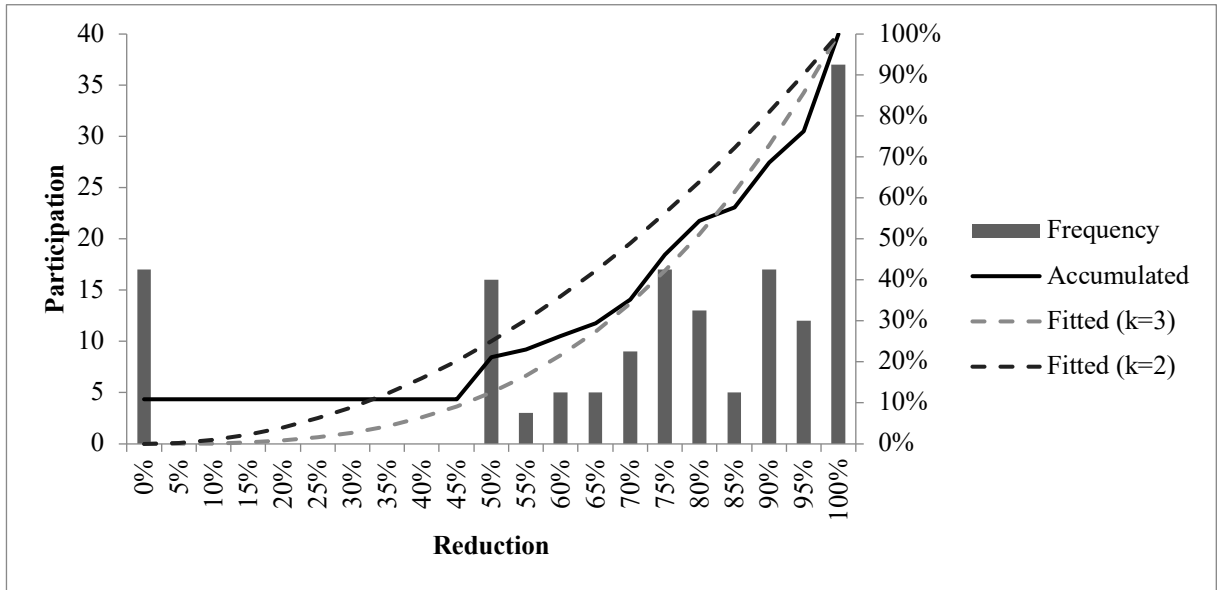
Source: Own calculations, Iuestionnaire-based survey, small settlements, BAZ County, Hungary, 2019

156 borrowers from 179 answered the survey question related to the willingness to accept a payment reduction, 37 of them would require a reduction of 100%, while 16 borrowers are willing to pay the total amount without any reduction (reduction=0%). One borrower would even pay more than required (reduction=-46%), probably, she/he did not understand the question. We can also see in Figure 9 that borrowers with larger payment obligations (i.e. larger debts) would request larger reductions. Lenders might be willing to give larger reductions to large debtors, too, not least because of transaction costs (bargaining is costly for both parties).

Note that survey answers might be biased in both directions. First, people with overdue debts might wish to impress the interviewer by showing their willingness to pay, but at the same time, they might feel being at the beginning of a bargaining process and might try getting better terms. These opposite effects can cause an upward or a downward bias in the reductions depending on which one is dominating. We assume that the two effects more or less compensate for each other and, practically, answers as a whole are not biased, hence are reliable.

Figure 10 shows the histogram of bad borrowers according to the reduction they ask.

Figure 10: Bad borrowers' willingness to participate in a debt consolidation program

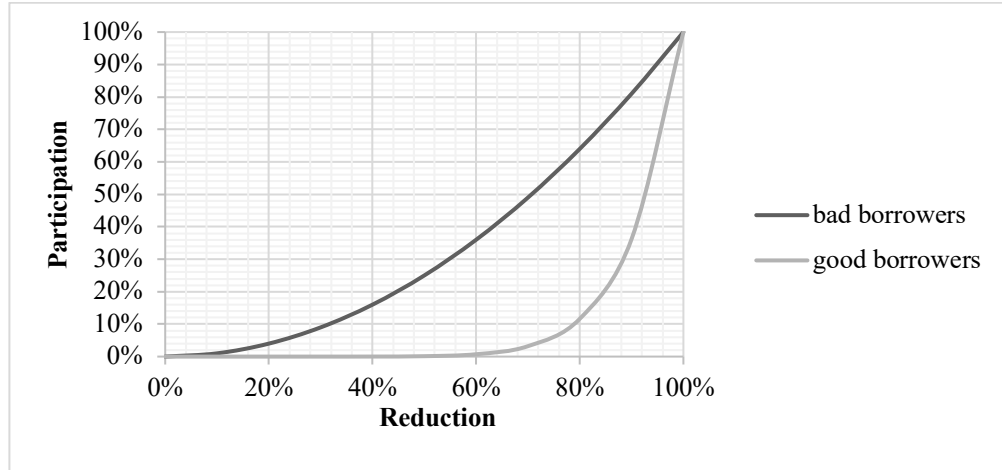


Source: Own calculations, Iuestionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Given the accumulated frequencies in Figure 10 (continuous line), we can calibrate (3), hence we can estimate parameter k for this population. It turns out that k is somewhere between 2 and 3, see the fitted curves (dashed lines). The exact estimation of parameter k depends on whether we take all answers seriously (k is closer to 2) or only those ones that are above 0% (k is closer to 3). Let us take the most optimistic view and estimate k to be equal to 2 which reflects a higher willingness-to-participate of the bad borrowers.

Based on our survey data, we can estimate also the average reduction rate ρ required by the bad borrowers (weighted with their overdue debts). We get $\rho = 0.75$. According to (6), such a large reduction is possible only if $l - k \geq 7.64$. As we estimated k to be around 2, l must be at least 9.64. Figure 11 depicts the sharp difference in the behaviour of bad and good borrowers that would be needed to operate a successful debt consolidation program on the investigated sample.

Figure 11: Required participation rates for bad and good borrowers ($k=2, l=9.64$)



Source: Own calculations, luestionnaire-based survey, small settlements, BAZ County, Hungary, 2019

At first sight, it does not seem realistic that good borrowers do not even start to think about defaulting under a reduction level of 60%. Thus, our model and its calibration to real-life data reveal why, in many cases, debt relief programs are not feasible on a market basis.

However, the model also gives some hints on how to improve the feasibility of such programs. For example, with an effective campaign involving NGOs, the k parameter can be lowered by motivating bad borrowers to participate, for example, by reducing transaction costs and administrative burdens and by launching an effective marketing communication campaign. It is also possible that bad borrowers can be convinced to accept lower reductions, too, in a dynamic bargaining process. At the same time, good borrowers should be excluded from the scheme as much as possible, for example by using strict eligibility criteria (applicants must be in a really disadvantaged situation, being in long arrears) or by applying a “saved once in a life” provision; the scheme can be close-end; reductions can be kept in secret; a bad borrowers’ list can be set up with serious consequences (stigma); etc.

If $l \geq 9.64$ is ensured, the debt consolidation program can be feasible. The direct benefits of bad borrowers (present value of total reduction) would be $\rho bBD_B = \rho\rho^2BD_B = \rho^3BD_B = 0.75^3 124226000 = 52.4$ million HUF. Clearly, this is a fictive reduction as they actually pay nothing. Due to the debt consolidation, bad borrowers would pay $(1 - \rho)bBD_B = (1 - \rho)\rho^2BD_B = 0.25 \cdot 0.75^2 124226000 = 17.5$ million HUF instead of not paying at all. This is around 14% of the debt portfolio’s face value, a portfolio whose

market value is zero without debt consolidation. This would be the profit of debt collectors, but only if they were able to exclude the degradation of good borrowers with proper mechanism design.

5.3. Conclusions

Criminals put into pillories in the middle ages were not able to work, were socially excluded, and suffered both physically and mentally. The same is true for poor people with overdue debts today. This is shown on a sample of 1196 individuals in active age (from 18 to 65 years) from which 740 are good borrowers (paying 100% of their obligation with no delay) and 179 are bad borrowers (mostly not paying at all).

We explain in a theoretical model why profit-seeking lenders are not motivated to offer large debt reductions to bad borrowers who are usually poor and have relatively small debts. Even if the repayment cash-flow would increase significantly, it is more rational to keep these borrowers as deterrent examples presenting toward the other borrowers what happens if somebody does not pay. The model helps to understand why and when lenders are willing (or not willing) to renegotiate debts; why they try to keep debt reductions in secret; why eligibility criteria and marketing communication are crucial in the design and operation of large-scale debt relief programs.

It also follows from the above model that if the state intervenes for the sake of positive external effects and subsidizes the scheme, then making the program feasible, can create a large social value. State intervention in favour of poor debtors, however, can be justified not only from the point of view of efficiency but also from a human ethical perspective. Even if physical pillories were a cost-effective tool to influence the behaviour of the large majority, civilized societies do not use them anymore. For the same reasons, financial pillories should also be given up.

Based on our findings, we recommend a wide range of policy measures in the context of Hungary such as improving the effectiveness of the private renegotiation process (online bargaining platform, randomized and controlled experiment to find the best practice of debt collection, etc.), reopening the subsidized house renting program, and/or reforming the personal bankruptcy regulation in the spirit of promoting the “fresh start” of the

debtors. A new wave of defaults is expected to come in line with the present Covid crisis, which urges innovations in debt management practices even more.

6. THE IMPACT OF OVERDUE DEBT – EMPIRICAL ANALYSIS

In the previous chapter, we saw that there is a market failure: under normal economic conditions, lenders chose not to save the most vulnerable borrowers with long-standing non-performing debt due to the moral hazard, and they rather keep them as deterrents to prevent the voluntary default of good borrowers.

In this chapter, we examine the impact of overdue debt on employment, on having a bank account, and on mental- and physical- health based on targeted questionnaires and in-depth interviews in the most disadvantaged regions of Hungary. In these regions, a significant part of the society has been the victim of financial exclusion in 2019, before the Covid 19 crisis, even under prospering economic conditions. We find that many borrowers hide from debt collection as a consequence of overdue debt that has escalated to an unbearable level due to penalty rates. These borrowers are following the hiding strategy and take their decisions accordingly: to avoid deductions, they do not apply for registered jobs, do not open bank accounts, and consequently, they are forced to live under constant stress. Overdue debt, therefore, leads to a certain type of debt trap mechanism resulting in significant loss for both the individual and the society. Debt relief programs can have significant individual and social costs and benefits in the long run. In this light, instruments that can efficiently prevent the excessive build-up of households' credit risk and are also able to address complex trade-offs in case of crisis can create huge value. This analysis is aimed at contributing to the development of more efficient debt relief instruments.

6.1. Introduction

Non-performing, overdue debts are regularly incurred in credit cycles, usually to an accelerated extent after a crisis. As described in detail under Chapter 3, section 3.2, it is well-documented in the literature that employment is an important factor in repaying household loans. If someone loses their job, the probability of non-payment increases significantly (Ben-Galim and Lanning 2010; Balás et al. 2015; Campbell and Cocco 2015; Dimitrios et al. 2016). Some recent papers recognized, however, that there is reverse causality, too, as overdue debts harm employment as well via different channels (Table 2). According to Mian and Sufi (2014), through the housing net worth channel, a

decline in the housing net worth reduces consumer demand, hence labour demand. Similarly, Verner and Gyöngyösi (2020) showed that overdue foreign currency mortgage loans reduced aggregate demand, leading to job losses, and, thus lowering employment levels and economic growth. However, overdue debts can reduce not only labour demand but also labour supply. For example, through the financial distress channel, deteriorating creditworthiness reduces an employee's chances of finding a job, keeping a job, or choosing working conditions (Herkenhoff 2019; Dobbie et al. 2020). In addition, through the housing lock channel, the deterioration in the collateral value of mortgages leads to a decrease in or a complete lack of labour mobility (Bernstein and Struyven 2017). Bernstein (2017) introduced the household debt overhang channel, which means that due to the renegotiation of overdue debts, repayments become income-contingent, hence debtors become motivated to hide their incomes.

Table 2: Impact of overdue debt on employment through different channels

Authors	Year	Channel	Impact
Mian & Sufi	2014	housing net worth	10 pp decline in net worth → 3.7 pp decline in labour demand
Bernstein & Struyven	2017	housing lock	negative home equity → 74-79% less mobility
Bernstein	2017	housing debt overhang	non-performing loan → 2-6% decline in employment
Herkenhoff	2019	financial distress	complex and cyclical effects
Verner & Gyöngyösi	2020	aggregate demand	output multiplier of debt service: 1.67 FX debt → 1.65 pp decline in employment
Dobbie et al.	2020	financial distress	bankruptcy flag removal → 0.4 pp increase in employment
Bernstein	2021	housing lock	non-performing loan → 2-6% decline in employment
Berlinger & Dobránszky & Molnár*	2021	hiding from debt collection	overdue debt → 14-23 pp decline in labour supply

Source: own analysis

Relative to the financial literature focusing on the relationship between overdue debts and employment, in our sample, overdue debts are more common while the institutional system dealing with financial difficulties is less developed and accessible. On the one hand, the Hungarian personal bankruptcy system is much stricter, hence less attractive

than in the US and most EU countries. On the other hand, in this special segment, debt renegotiations with banks or debt collectors are much less effective. Debts are relatively small, communication with debtors is more difficult and costly, and the collateral is less valuable compared to the average indebted household. These conditions may explain why small overdue debts remain unsettled en masse and for decades, while large non-performing loans are renegotiated much more efficiently and quickly. Furthermore, larger borrowers can obtain significantly larger discounts (Tirole 2006) contrary to moral intuition (Kornai 2016). In our research, the negative effects of overdue debts last typically longer than in the financial literature and undermine economic growth and social cohesion across several business cycles.

Escape from debt collection creates a special poverty trap, as it creates a positive feedback mechanism through which poverty is reproduced and even exacerbated (Azariadis 1996). Due to overdue debts, the lender avoids registered work and electronic payment, trying instead to make a living from casual work in the black economy and paying for everything in cash. Thus, overdue debtors benefit less from the services of the welfare systems (unemployment benefits, health care, pensions, etc.) and formal financial services (payment services, savings opportunities, loans, etc.), becoming more vulnerable and being forced to make worse compromises (Allen et al. 2016).

Escape from debt collection as a life strategy severely limits the debtors' and their families' capabilities as defined by Sen (2014). Several kinds of poverty traps, although based on different mechanisms, were presented by Banerjee and Duflo (2011), mainly in relation to education, health, and financial systems. Mullainathan and Shafir (2013) examined the mechanism of the debt trap, its psychological, behavioural effects, the 'scarcity mindset', and the role of unexpected expenditures.

The thought experiment underlying our empirical analysis is what would happen if long-standing non-performing loans were renegotiated and restructured (combined with partial debt relief), thus the threat of recovery over the debtors' heads would be averted. Our research aims to find out what impact such a program is expected to have on employment, bank accounts, and the health of the population.

Section 6.2 discusses the hypotheses of the study. In Section 6.3, the considered database is presented. Section 6.4 provides a comparative description of households living with

and without overdue debts. Section 6.5 analyses the impacts of overdue debts in a multivariable setting. Finally, the conclusions are summarized in Section 6.6.

6.2. Development of Hypotheses

As described in chapter 4, at the start of this research, we conducted 14 in-depth interviews with local residents, mostly women, in a chosen settlement of Borsod-Abaúj-Zemplén (BAZ) County. We collected information on households' financial management, their savings, and borrowing habits. During the interviews, the issue of utility, bank, and other debts and problems arising from default was raised several times. In many cases, the pattern emerged that the household obtained general-purpose, consumer, or mortgage credit(s) from banks either in Hungarian forint (HUF) or in foreign currency and then failed to repay them due to some exogenous shock (job loss, health deterioration, exchange rate and interest rate changes, etc.). Banks handed over non-performing loans to debt collectors, and, since then, overdue debts have just further accumulated.

The formal process for dealing with overdue debts can be summarized as follows. We distinguish three stages if the debtor does not pay his debt. The recovery phase is the first 90 days after arrears, during which the creditor actively contacts the debtor and seeks alternative solutions for payment. If the debtor is overdue for more than 90 days (with the repayment of a bank loan, utility bill, etc.), the unpaid financial obligation enters the claim phase. The lender will usually continue to look for alternative solutions, but the claim will be handed over to a claim manager. After 180 days from the date of non-payment, in the enforcement phase, the contract is terminated, the claim is sold, and debt is collected based on out-of-court or in-court proceedings. In addition to penalty interest, the collection and enforcement costs borne by the debtor can significantly increase the debt's value. The debtor's assets, income, and movable and immovable property are under the scope of enforcement. Hungarian legislation does not recognize the institution of *datio in solutum*. If the collateral of the loan is not sufficient to repay the outstanding debt, the debtor remains liable for the outstanding part of the debt. During the enforcement, movable and immovable property may be sold to cover the outstanding debt, and a certain amount may be automatically deducted from the debtor's registered tax-paying income before the debtor receives it (MNB 2019). Act LIII of 1994 on Judicial Enforcement states that the claim must be recovered primarily from the debtor's wages; the amount recovered

may not exceed 33%, or, exceptionally, 50% (e.g., in case of child support or multiple foreclosures). Accordingly, the debt collector is required to examine whether the debtor has a registered job.

Our interviewees, who reported overdue debts, were already in the enforcement phase without exception, so all their legal income was subject to a 33% or 50% deduction. As the market value of the movable and immovable property is typically very low in this segment, foreclosures and evictions were not worthwhile for the debt collectors; consequently, unresolved debts have persisted for many years, and the penalty interest has accumulated. The initial loans of a few hundred thousand forints have since grown to debts of several million. The creditors renounced ever being able to repay these huge sums, so they gave up trying. Letters sent by debt collectors are not even opened, the exact amount of the debt is not known. The debtors equipped themselves to hide their incomes and potential savings from debt collectors throughout their lives. Interviewees reported that, in many cases, they do not apply for registered jobs or open a bank account specifically because of overdue debts. Overdue debts have a negative effect also on debtors' mental and physical health. They are angry at banks and debt collectors, feel misled, and do not want to have any business with the banks, thus accepting their long-term financial exclusion.

Based on the existing literature and the findings of the in-depth interviews, we formulate the following three hypotheses in relation to the negative impacts of overdue debts:

Hypothesis 1 (H1)

Debtors with overdue debts are less likely to apply for a registered job.

Hypothesis 2 (H2)

Debtors with overdue debts are less likely to open a bank account.

Hypothesis 3 (H3)

Debtors with overdue debts suffer from worse mental and physical conditions than debtors without overdue debts.

In the following sections, we examine these hypotheses in detail based on the questionnaire survey.

6.3. Data and methodology

In total, we have information on 504 households and 1794 individuals; 1196 were of active age (18–65 years), and 179 had overdue debts. Households with no active-age members were excluded from the analysis. Of the remaining 496 households, 136 were inhabited by individuals who had some form of overdue debts (177 individuals in total). The questionnaire included questions for each adult, for the household, and for the respondent only. Economic activity, the possession of a bank account, and overdue debts play a key role in our analysis, and information on these is known for all adult members of the interviewed households. The majority of the respondents (72%) were women as they were more familiar with household financial management. See Annex 3 for details on the variables used in the analysis.

As explained in chapter 4, the data was collected by using questionnaires that were filled in by the interviewer based on a personal survey. The questionnaire contained direct questions regarding the direction of the causality between the main explanatory variable and the dependent variables. Similar to Krumer-Nevo et al. (2017), we used descriptive analysis to examine the results of the direct approach.

We examined the causality between overdue debt and the dependent variables using a causality map analysis as suggested by Békés and Kézdi (2021). We calibrated multivariate linear probability models. The basic linear probability model is:

$$Y_i = \alpha + \beta X_i + \sum_k \gamma_k Z_{ik} + \varepsilon_i \quad (11)$$

where, Y is the dependent variable, X is the variable of interest, a dummy variable if the individual has overdue debt or not and Z s are the control variables.

Although there are different models suggested by researchers, for example the generalised additive model (GAM), (Ntasalaze and Ikhilde, 2017) or generalised linear models (Gilligan et al. 2018), linear probability models (LPM) are a good choice to characterize average multivariate relationships (Gomila 2021; Békés and Kézdi 2021; Aldrich and Nelson 1984), especially given their advantage that the parameters are easy to interpret (Caudill 1988). Additionally, LPMs are used in the related literature analyzing the impact

of debt on employment (Mian and Sufi, 2014; Bernstein and Struyven 2017; Bernstein 2017; Dobbie et al. 2020), financial inclusion (Fanta and Makina 2019; Fitzpatrick 2015), and health (Mahoney 2015; Hyytinen and Putkuri 2018, Gross and Notowidigdo 2017) as well.

However, linear probability models have the disadvantage of assuming that the conditional probability function is linear, which may not be the case. This can lead to results not restricting $P(Y = 1)$ between 0 and 1.

We also run binary logistic regressions and PROBIT models to examine the relationship with the also binary explanatory variable indicating whether the individual has overdue debt controlling for variables Z_k and we investigated causality with the help of an instrumental variable as well.

6.4. Descriptive Statistics

In this section, we use data obtained from the questionnaire to characterize the individuals and households with and without overdue debts. First, we present the results of a direct inquiry on what the respondents think about the causal relationships formulated in H1, H2, and H3; second, we perform a one-dimensional comparative analysis of their characteristics.

6.4.1. Direct Inquiry

In the questionnaire, we asked directly whether the interviewee knows someone who, because of his or her overdue debts and the fear of debt collection does not take up a registered job (H1), does not open a bank account (H2), or has experienced a deterioration in his or her health (H3). Respondents also had to indicate whether this kind of causality exists for him- or herself, for a close family member living in the household, for somebody in the wider family, or for someone living in the settlement or in a wider circle of acquaintances.

Nearly half of all respondents (49%) know someone who does not have a registered job because of overdue debts. Similarly, nearly half of the respondents reported the negative effects of overdue debt on bank accounts and health (45% and 58%, respectively). Considering only the households with overdue debts, almost a quarter of the respondents

reported that there is at least one person in their household who, specifically because of the outstanding overdue debts, does not take up a registered job (18%), does not open a bank account (21%), or has experienced a health deterioration (34%). It is noteworthy that the deterioration in health, both in a narrower and wider context, was given greater emphasis by the respondents than the other two consequences.

We examined those households where no one had a bank account (30% of all households) in more detail. In previous research, representative of the whole country, the proportion of such households was lower: 24% (Illyés and Varga 2015) and 17% (Horn and Kiss 2019). In our case, the main reason for the lack of a bank account was that it is not needed (60%) and/or it is too expensive (51%), but 21% of the respondents referred to the fear of debt collection. At the national level, 90% of those who did not have a bank account said they did not need it, 25% said it was too expensive, 10–11% did not trust credit institutions, and 3–4% feared security risks (Illyés and Varga 2015). We note that the questionnaire of Illyés and Varga (2015) did not include the possibility of fear of debt collection, hence such fears probably appeared in the answers “do not trust credit institutions” and “fear of security risks.” Clearly, in our sample (villages of BAZ County), costs play a significantly larger role than in the national-level sample, which may be due to lower incomes.

Although not listed in Table 3, we also directly asked the interviewees about the extent to which overdue debts are a problem in general. According to respondents, this is a serious problem in their immediate environment (66%), in the village (81%), and nationally (89%).

Table 3: Empirical analysis - results of the direct inquiry.

Do you know someone, who – due to their overdue debts and the fear from debt collection	% of all respondents (N=496)		% of respondents with overdue debts (N=117)
	Within the household	In a wider circle of acquaintances*	Within the household
...does not take up a registered job, because their wage would be decreased by deductions.	6%	49%	18%
...does not open a bank account, as their debited money would be decreased by deductions.	8%	45%	21%
...experienced a deterioration in their health.	11%	58%	34%

*including the household

Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019

Note: The table shows how respondents answered our direct inquiry, whether they knew someone in their environment who did not take up a registered job, did not open a bank account or experienced a deterioration in their health specifically because of overdue debts.

The answers to the above questions are consistent, and we have no reason to suspect that the interviewees did not understand the questions or that the answers were significantly distorted for other reasons, although smaller biases are possible in both directions. At the level of the closest family members, due to the personal involvement and the need for self-discharge, the impact of overdue debts may be somewhat exaggerated. On the other hand, respondents are likely to admit neither overdue debts nor hiding from enforcement. Therefore, the two opposite biases may extinguish each other to some extent. At the same time, at the level of a wider circle of acquaintances, the lack of information may have skewed the responses downwards. Nevertheless, if there is some bias, the respondents are more likely to present the problem as being less severe than it is. The above results, therefore, support our hypotheses based on in-depth interviews.

6.4.2. Comparative Analysis

Next, analysing the answers to the questionnaire, we examine whether the statistical characteristics of the sample are consistent with our hypotheses. Our primary goal is to characterize individuals and households with and without overdue debts. In some cases when data were missing, observations were removed from the sample. Table 4 shows the

extent to which the subsamples of individuals with (179 individuals) and without (1017) overdue debts differ from each other. Variables in bold are included in the multivariate regression analysis to examine the combined effects of the variables (in Section 5).

Table 4: Differences between individuals and households with and without overdue debts

Number of observations	Variable	With overdue debts	Without overdue debts	Significance of the difference, p-value
Variables related to individuals				
1196	Full time job	11%	42%	***0,000
1196	Registered work	13%	45%	***0,000
1183	Gender (women)	50%	50%	0,970
1196	Age (year)	42,9	39,2	***0,000
1196	Education (less than elementary school)	21%	4%	***0,000
1196	Education (high school diploma)	3%	27%	***0,000
1196	Net income (thousand HUF)	60,4	95,8	***0,000
1157	Bank account	32%	60%	***0,000
286	Loan instalment (thousand HUF)	21,0	28,9	***0,000
Variables related to households				
1196	Household members	3,3	3,6	**0,029
1196	Children	1,7	1,3	***0,004
1151	Income per capita (thousand HUF)	52,3	90,6	***0,000
1160	Forex loan	21%	20%	0,576
1143	Ability-to-pay	1,0	1,2	***0,000
1196	Social aversion to overdue debts	0,2	0,3	**0,034
1196	Social aversion to non-registered work	0,2	0,2	0,964
1165	Settlement development	40,9	42,4	0,112
1165	Chronic illness	31%	21%	***0,010
Variables related to the respondents				
496	Smoking	56%	38%	***0,001
496	Alcohol	1%	3%	*0,093
493	Medication	38%	38%	0,893
496	Stressed	60%	36%	***0,000
495	Hopeless	48%	22%	***0,000
495	Tired	65%	46%	***0,000
496	Unhappy	51%	24%	***0,000
496	Not socializing	37%	55%	***0,000
496	Satisfied with health	48%	56%	0,126

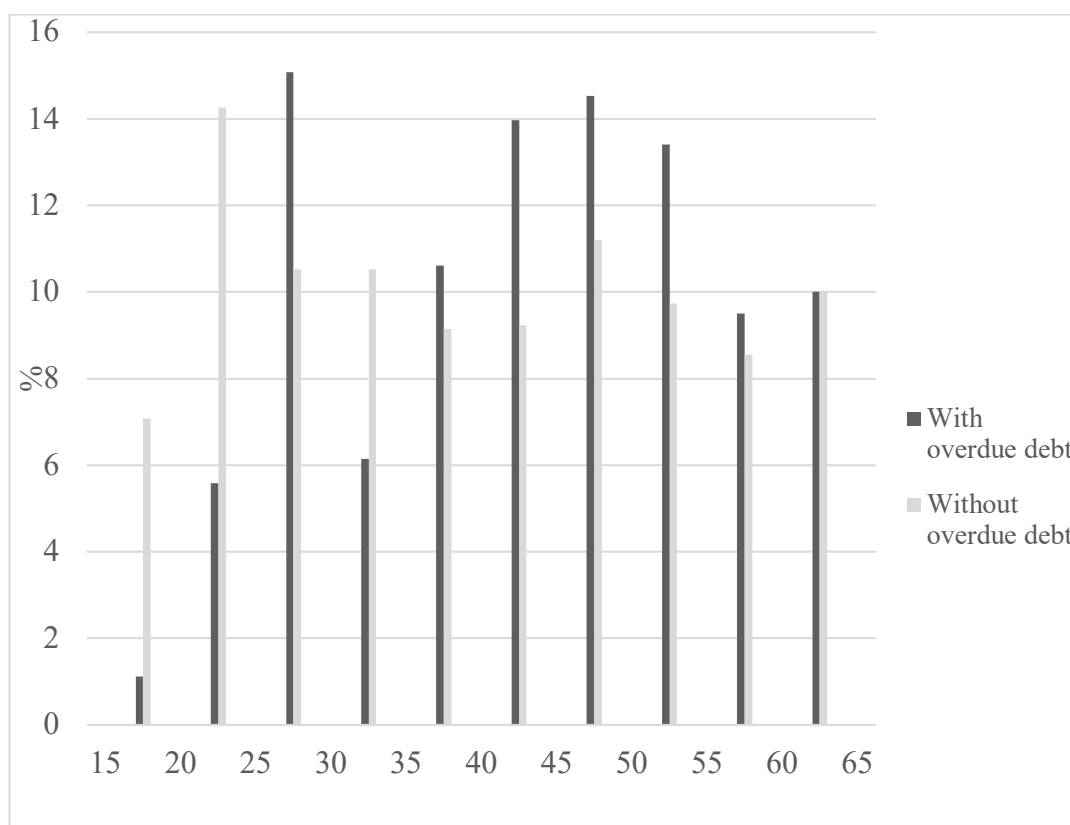
Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019

*Note: The table shows the average values of the variables for the subsamples of individuals or households with and without overdue debts. The description of the variables can be found in the Annex. Differences were tested with independent t-test, Mann-Whitney test or Kruskal-Wallis test depending on the distribution of variables in the subsamples. We reject the null hypothesis of independence if the p-value is smaller than the benchmark significance level of 1%, 5%, and 10% (marked with ***, **, or *, respectively).*

Looking at the full-time jobs or all registered jobs in Table 4, the difference is notable for the two subsamples (31 and 32 percentage points, respectively) and statistically significant. Hence, there is a close negative association between employment and overdue debts. However, it is not clear whether overdue debts cause lower employment (overdue debts → employment) or vice versa, the lack of employment causes non-payment (employment → overdue debts). It is likely that both effects occur simultaneously, and this positive feedback loop creates a vicious circle leading to a poverty trap. Considering that the year 2019 (when the survey was taken) was characterized by a strong economic boom and general labour shortages, we can assume that the causality of interest (overdue debts → employment) was strongly present as someone who wanted a full-time and registered job during this period had plenty of opportunities. Anecdotes also support the fact that, in many cases, employers offer special employment contracts specifically designed to avoid deductions (for example, by paying the wages in cash with daily settlements); moreover, some foreign job opportunities have been advertised explicitly as a tool to evade debt collections.

There is no difference in gender between those with overdue debts and those without. Those with overdue debts are a few years older, but the difference, while statistically significant, is not remarkable. Figure 12 shows that the relationship is non-linear (middle-aged people are more likely to take out a loan and more likely to become insolvent than young or older people).

Figure 12: Age distribution in the subsamples of individuals with and without overdue debt

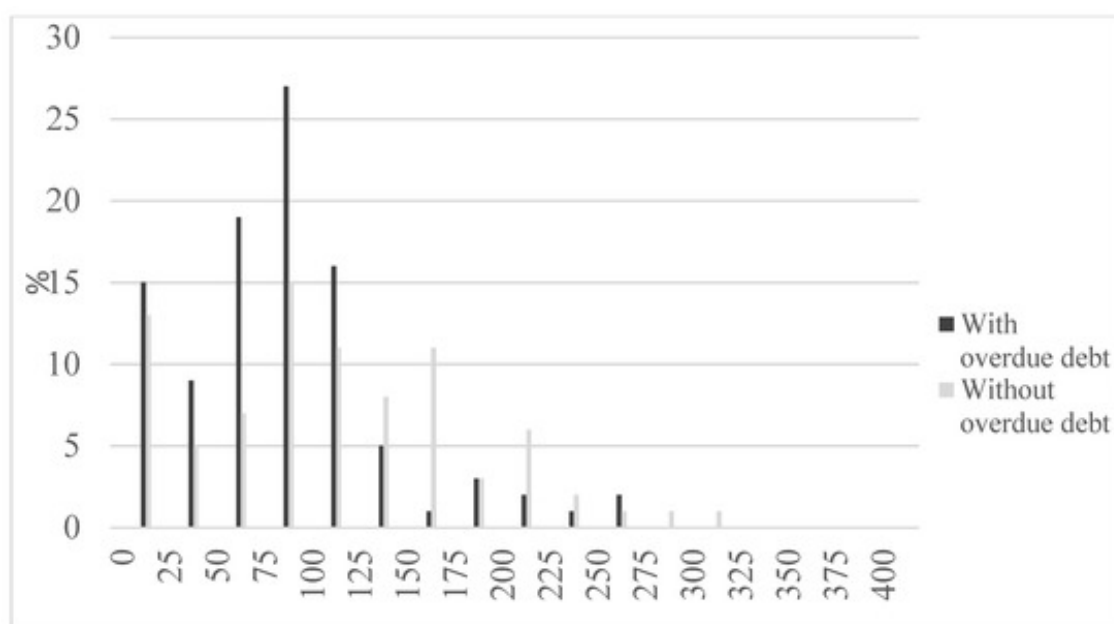


Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019.

In terms of education, we found a significant difference (Mann–Whitney test p-value = 0.000) between the two subsamples. Those with overdue debts have a lower education level in general. Among them, the proportion of those who have not completed the eight classes of elementary school is significantly higher, and the proportion of those who do not have a high school diploma is significantly lower. As education can have an effect on both overdue debts and employment, we will control for this variable in the multivariate regression model.

The net income from work in the previous month is strongly correlated with registered and full-time jobs. The difference is significant in this respect, too, as those without overdue debts have an income advantage of more than HUF 35,000. Figure 13 shows the distribution of net incomes across the two subsamples.

Figure 13: Distributions of net income in the subsamples of individuals with and without overdue debts

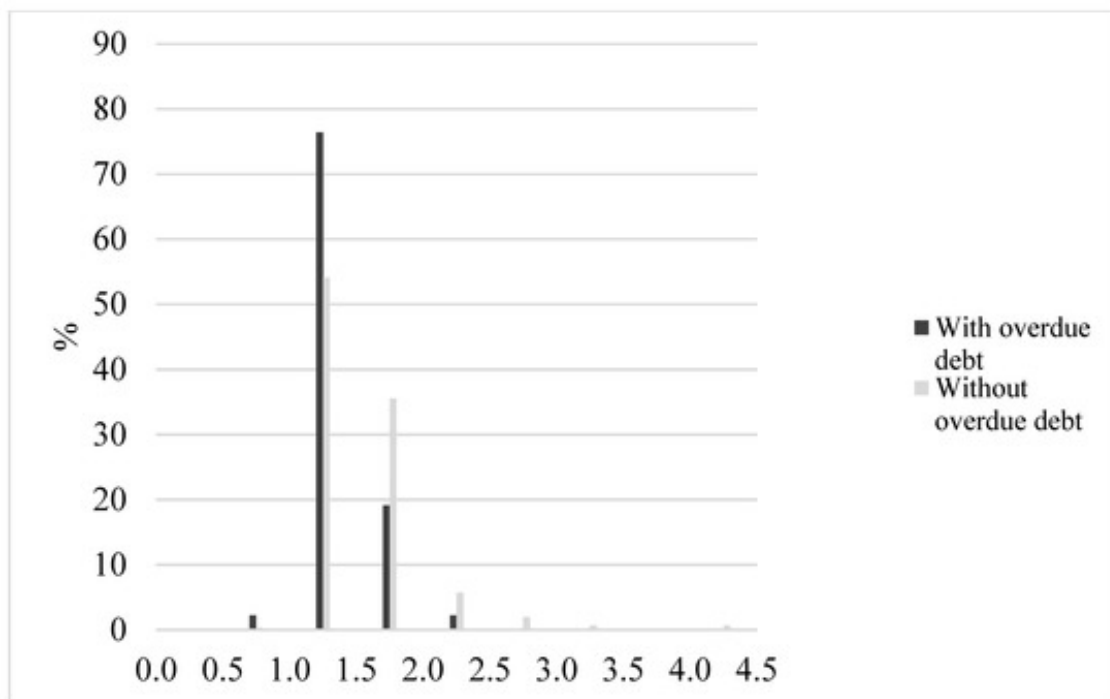


Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019.

We find that in the lower-income categories overdue debtors are significantly overrepresented. Returning to Table 4, bank account ownership is much (28 percentage points) lower among those with overdue debts, and the difference is significant, which is in line with our expectations. In the regression analysis, we examine bank account ownership in detail as a dependent variable. Few data are available on the size of the loan instalments and the data are not reliable because the respondents were uncertain about the instalments.

Those with overdue debts have significantly more children and, thus, significantly larger families (see Table 4); this raises serious questions about child protection and intergenerational social mobility (these issues, however, go beyond the scope of this study). In a household, per capita income is significantly higher where there is no overdue debt, but it is not much different from the individual incomes measures. Contrary to our previous expectations, there is no difference between the two groups in terms of whether there was a foreign currency loan in the family or not (Bethlendi 2011; Verner and Gyöngyösi 2020). At the household level, we define the so-called ability-to-pay ratio, which is the total monthly net income of the household divided by the total monthly expenditure. The financial situation of a household is characterized by this ratio being below, equal to, or above 1 (see Figure 14).

Figure 14: Distributions of the ability-to-pay ratio in the subsamples of households with and without overdue debts

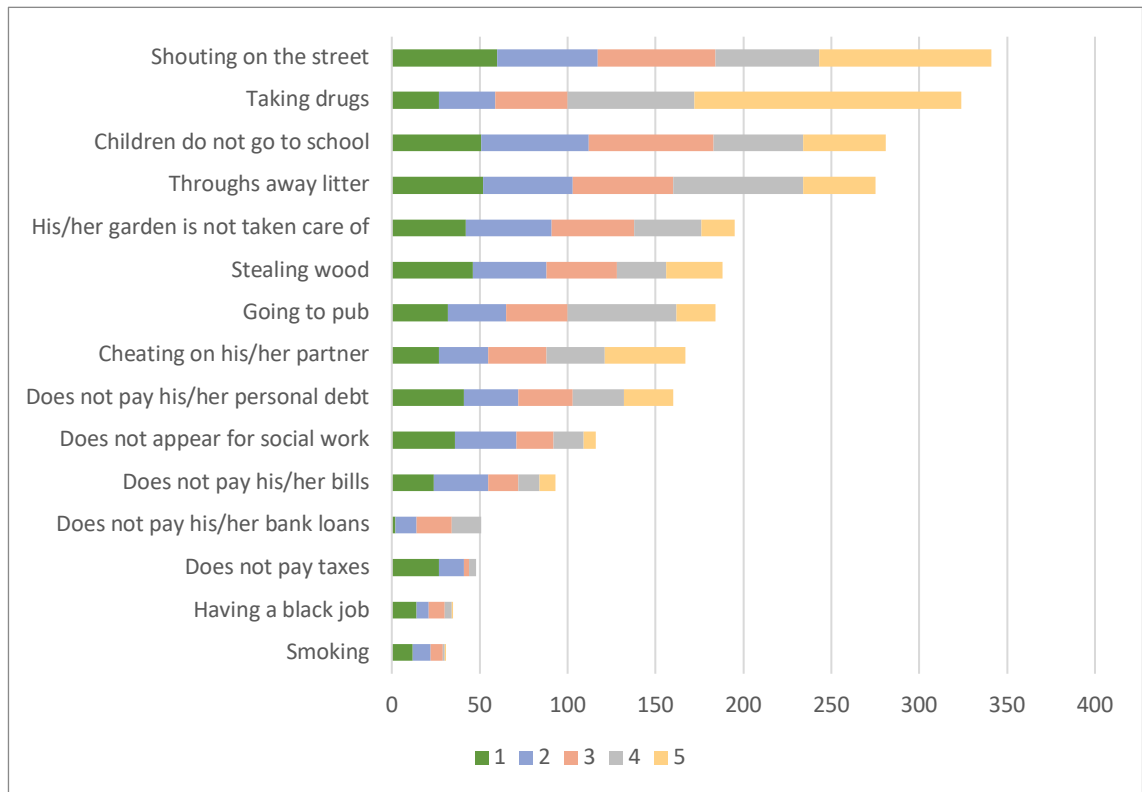


Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019.

As shown in Figure 14, a significant proportion of households—more than half—spends all their monthly income for the living costs even in the subsample without overdue debts, at least in terms of official incomes. Unsurprisingly, households that have difficulty financing their monthly living expenses have more overdue debts.

In the questionnaire, we listed some behaviours that are mostly convicted by society. Respondents were asked to select and rank the five behaviours they believe are most convicted by those living in a given settlement. Figure 15 shows the results for the entire sample.

Figure 15: Perceived social aversion (number of mentions among the first five most convicted behaviours)



Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019. Note: The first five most convicted behaviours were ranked by the respondents (first: the most convicted behaviour; second: the second most convicted behaviour, etc.).

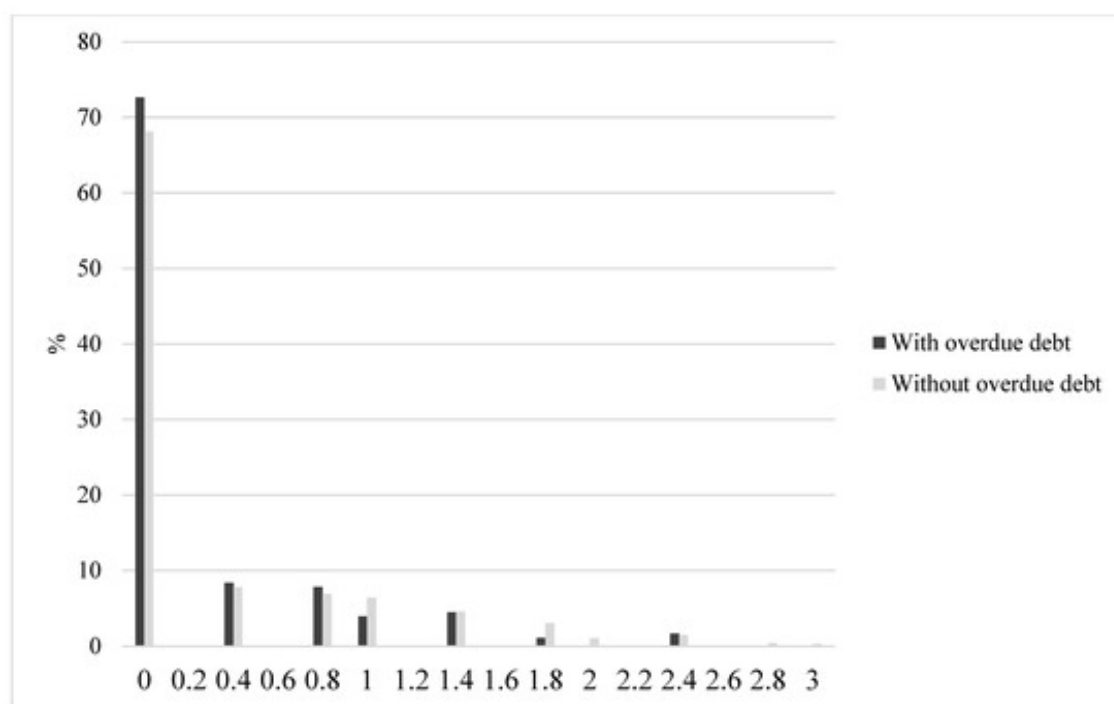
Figure 15 shows that yelling and quarrelling on the street is believed to be the most convicted behaviour; if we look at the number of first ranks (i.e., highest negative rank), it is drug use. Interestingly, non-payment of personal loans, utility bills, bank loans, and taxes are seen as much less negative behaviour. Non-payment of official debts (utility bills, bank loans, taxes) in particular seems to be a “forgivable sin,” with only unregistered work and smoking being less convicted.

Based on the responses in Figure 15, we assigned a composite index specific to the respondent—the perceived social aversion—separately to overdue debts and to unregistered work. The former was calculated so that the behaviours “overdue utility bills”, “overdue bank loan”, and “overdue tax” received 5 points if the behaviour was ranked first; 4, if ranked second; 3, if ranked third; 2, if fourth; and 1, if fifth (zero, if not mentioned in the first five), and then these points were averaged over the three behaviours. The (perceived) aversion to unregistered work was quantified in the same

way (but it did not need to be averaged because there was only one such behaviour). The variable of perceived social aversion reflects higher perceived rejection if its value is greater. This is a perception that contains objective and subjective elements; we did not separate these in our analysis. What matters for our estimates is what the respondent thinks about the level of aversion in his or her environment, as it may have a direct impact on loan repayments.

In Table 4, the perceived social aversion to overdue debts is significantly smaller among those who have overdue debts, which seems logical. Interestingly, there is no difference between the two subsamples in terms of aversion to unregistered work. Figure 16 shows the distribution of perceived social aversion to overdue debts across the two subsamples.

Figure 16: Distributions of the perceived social aversion to overdue debts in the subsamples with and without overdue debts

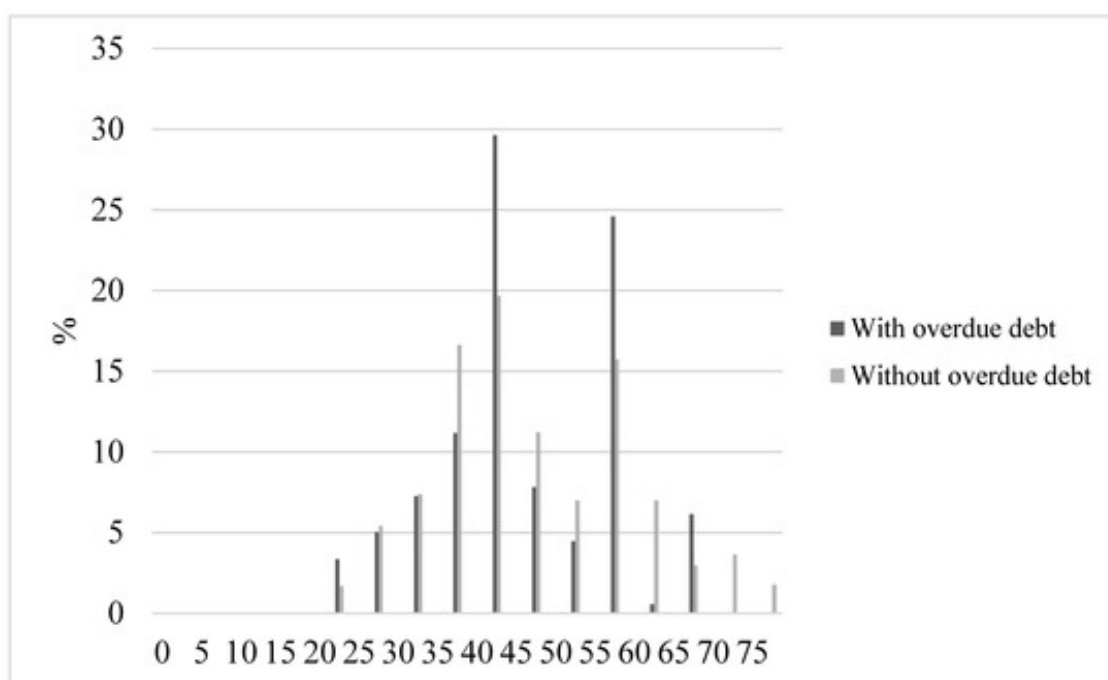


Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019.

Perceived social aversion to overdue debts differs significantly in the two subsamples: those with overdue debts think less that society convicts them for this behaviour and vice versa.

The development of the settlement was measured with the Hungarian Central Statistical Office's composite settlement indicator and a significant difference was found (see Figure 17).

Figure 17: Distributions of the settlement development indicator in the subsamples of households with and without overdue debts



Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019.

The composite settlement indicator aggregates a number of different characteristics in terms of society, demography, housing and living conditions, the local economy and labour market, infrastructure and environment. In Figure 17, both subsamples show a two-mode distribution, which can be explained by the settlement structure of BAZ County. Although difficult to discern in the figure, those with overdue debts typically live in less developed settlements. This difference may also affect both overdue debts and employment, therefore, we include this variable in the multivariate regression analysis in Section 6.5.

We can find one health variable in Table 4 that relates to the household, it is “chronic illness”, indicating whether there is a family member in the household not able to work due to poor health conditions, which occurs 10 times more frequently among those with overdue debts. The other health variables (addictions, health status, mental status, etc.), relating directly to the respondent, also show significant differences in favour of those without overdue debts, with the exception of alcohol and medication. Surprisingly, there are more heavy drinkers among those without overdue debts, but the difference is significant only at the 10% level. In this respect, the fact that the majority of respondents

are women may distort the picture. When investigating the impacts of overdue debts on health (H3), we compute an aggregate health index from the above variables.

6.5. Multivariate Analysis

In this section, we examine the variables' overall effects on employment, bank account, and health in multivariate linear regression models, with a particular emphasis on overdue debts as a possible explanatory variable. The Ramsey RESET test supports the use of linear models in all three cases. The control variables in the linear regression models were chosen to meet two requirements. First, the questionnaire answers should be reliable, and second, drawing a map of causality, we identified those variables that have an effect on both the dependent variable and the main explanatory variable (overdue debts); hence, their omission would have brought endogeneity to the model. For all independent variables, vector inflation factors are below 5, indicating no multicollinearity problems. We checked several specifications during the robustness tests, and the most realistic variants are presented below.

Education is further detailed as a category variable: less than 8 classes of elementary school (reference point), elementary school, vocational exam, high school diploma, and university degree. In addition to age, the square of the age is also included in the model to take into account the potentially nonlinear relationship between age and employment. The detailed content of the variables is described in Section 4 and in Annex 3.

6.5.1. Overdue Debt and Employment

Our first hypothesis states that overdue debts have a negative effect on registered work because debtors try to avoid debt collections. In principle, overdue debts (especially mortgage loans) might affect labour supply through other channels as well (housing net worth, financial stress, housing lock, household debt overhang, etc). These causes, however, were not mentioned by the interviewees; thus, our analysis focuses only on the escape from the debt collection channel.

Table 5 shows the regression results separately for any type of registered work and for only the 8-h registered job (full-time job) as dependent variables.

Table 5: Overdue debt and employment

		Y= Registered work N=1131 modified R ² =0,250			Y=Full time job N=1131 modified R ² =0,244		
		Beta	t	p	Beta	t	p
C	Intercept	-0,80	-5,56	***0,000	-0,81	-5,73	***0,000
X	Overdue debts	-0,23	-5,96	***0,000	-0,21	-5,61	***0,000
Z1	Gender (female)	-0,15	-5,77	***0,000	-0,14	-5,52	***0,000
Z2	Age	0,05	7,38	***0,000	0,05	7,48	***0,000
Z2	Age ²	0,00	-6,98	***0,000	-0,00	-7,11	***0,000
Z3	Education: primary school	0,13	2,46	**0,014	0,11	1,99	**0,046
Z3	Education: vocational exam	0,36	6,45	***0,000	0,35	6,26	***0,000
Z3	Education: high school diploma	0,42	6,94	***0,000	0,40	6,79	***0,000
Z3	Education: university degree	0,53	6,64	***0,000	0,53	6,76	***0,000
Z4	Ability-to-pay	0,00	-0,02	0,982	0,01	0,36	0,722
Z5	Settlement development	0,00	2,46	**0,014	0,00	2,45	**0,014
Z6	Chronic illness	-0,06	-2,02	**0,044	-0,07	-2,29	**0,022

Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019

Note: The table summarizes the results of OLS regression models. C is the intercept, X is the main explanatory variable and Z_k are the control variable. Results are similar when calculating robust standard errors. If coefficients are significant at 1%, 5%, or 10% level, p values are marked with ***, **, or *, respectively.

Further model specifications are in Annex 4.

As shown in Table 5, there is a strong relationship between registered work and overdue debts; on average, ceteris paribus, the probability of having a registered job is 23 percentage points lower in case of overdue debts. Middle-aged men with more degrees are more likely to have a registered job. The ability-to-pay ratio (total official net income of the household/total living expenses) is not significant for employment either economically or statistically; it is likely that the effect is (partly) overtaken by other variables like overdue debts and education. There is a negative correlation between registered jobs and the variable “chronic illness”. The development of the settlement has a significant direct impact on employment: one standard deviation increase in the value of this variable increases the likelihood of having a registered job by almost 4 percentage points. If we examine the impact of overdue debts only on full-time jobs, we receive similar results.

The question may arise as to whether the coefficients are shown above also represent a direction of causality. Due to overdue debts, employment is lower or vice versa, and due to the lack of registered work, repayment is more difficult and therefore the probability of overdue debts will be higher (Ben-Galim and Lanning 2010; Balás et al. 2015; Campbell and Cocco 2015; Dimitrios et al. 2016). In the above model, we account for a number of explanatory variables affecting both overdue debts and employment, but it is worth considering what other potential confounding variables may be omitted from the analysis. Such omitted variables can be personality traits, such as reliability, accuracy, and conscientiousness, which are likely to have a negative impact on overdue debts and a positive impact on employment. Thus, these omitted variables are likely to skew the coefficient of overdue debts downwards. This could mean that the 23% and 21% negative impacts on registered work and full-time jobs, respectively, are overestimated. In absolute terms, somewhat smaller coefficients are more realistic. Patience and risk-taking may also be important additional missed variables, but their respective impacts are less clear. In any case, large negative coefficients are consistent with the results of the direct inquiry in Section 6.4.1.

Since our analysis focuses specifically on the “overdue debts → registered work” effect, we also examine the relationship through a specific instrumental variable, the perceived social aversion to overdue debts.

A suitable instrumental variable IV is required to (i) affect the assumed explanatory variable X, (ii) be independent of the control variables Z_i , and (iii) have no direct impact on the outcome variable Y (only via X). In practice, it is usually difficult to find a variable that unarguably meets all expectations. We show below which results it leads to; if X is the overdue debts, Y is the registered job, and the IV is the perceived social aversion to overdue debts.

Figure 15 and Figure 16 show the distribution of perceived social aversion of each behaviour in the studied population. To recap, interviewees were asked to select from a pre-defined list and rank the five most convicted behavioural patterns, based on which we calculated a composite indicator for overdue debts (utility bills, bank loans, tax). We then extended this indicator to all members of the household.

The composite indicator—the perceived social aversion to overdue debts—is presumably not strongly related to the control variables as the question refers to the opinion of the village. At the same time, it is possible that the individual view on the opinion of the village is also determined by individual and household characteristics. In any case, in our sample, the perceived social aversion to overdue debts hardly correlates with any other control variables; therefore, the hypothesis of independence cannot be rejected. It is possible that there is a link between various deviant behaviours, such as unregistered work and refusal to pay loans. However, we did not find any indication of this in a statistical sense. It is also possible that societal expectations may change, for example, because of an exogenous shock. The foreign currency credit crisis in Hungary (Bethlendi 2011) could be considered as an exogenous shock, as a result of which, the society may become less likely to convict those who do not pay their debts if the proportion of non-paying households increases (Becker and Murphy 2000). In our database, however, there is no significant relationship between foreign currency loans and the perceived social aversion (Mann–Whitney test p-value is 0.391). The relationship is examined by breaking down by settlements, but the t-tests and Mann–Whitney tests do not indicate a relationship between the two variables. Further, the development of the settlement can, in principle, be related to social aversions, but we do not see a close correlation here either (+0.05). Logically, we can assume that the perceived social aversion to overdue debts affects the repayment of loans but does not directly affect employment, except through the channel of overdue debts, so it can be considered as a suitable instrumental variable in this context. In a linear probability model (LPM), we first regress the variable X (overdue debts) and then the variable Y (registered work) on the IV (perceived social aversion to overdue debts), and we get the values of -0.033 and $+0.133$ for the coefficients (the standard error is 0.018 and 0.024, respectively), which implies $0.133/-0.033 = -4.03$ coefficient for the relationship between X and Y. Although the signs are as expected, the coefficient of 4.03 is incomprehensible in the LPM. By performing the same analysis but in a logit regression model, we conclude that overdue debts reduce the chances of the debtor having a registered job by 14%.

Despite the theoretical and practical limitations of our analysis based on the selected instrumental variable, the estimated coefficient of 14% seems realistic, considering the results of the in-depth interviews, direct interviews, and multivariate regression analyses accounting for the effects of the potential omitted variables. Bernstein (2017) found on a sample of US mortgage borrowers representative of the whole population that overdue

debts decrease employability by 2–6%. Our estimate (14%) is much higher, not least because our sample is representative of people living in small villages in one of the most disadvantaged counties of Hungary.

6.5.2. Overdue Debt and Bank Account

As a next step, we examine our second hypothesis more closely, namely that overdue debts have a negative effect on bank account ownership. Bank account ownership is the best proxy for financial inclusion as this is the prerequisite for all other financial services (Allen et al. 2016). Several studies showed a close relationship between registered work and a bank account (Illyés and Varga 2015; Koku 2015; Allen et al. 2016; Krumer-Nevo et al. 2017; Horn and Kiss 2019; Fernández-Olit et al. 2019). Thus, if overdue debts negatively affect registered work (see Table 5), these can indirectly affect bank accounts too. However, based on the in-depth interviews, we assume that there is a direct channel between overdue debts and the bank account, as well, through the escape from the debt collection channel. Table 6 shows the results of the multivariate regression analysis. To make our results comparable with the results of similar, albeit nationally representative research (Illyés and Varga 2015; Horn and Kiss 2019), we extended our regression model with net income and registered work.

Table 6: Overdue debt and bank accounts

		Y=Bank account		
		N=1131	modified R ² =0,323	
		Beta	t	p
C	Intercept	-0,14	-0,97	0,332
X	Overdue debts	-0,09	-2,31	**0,021
Z1	Gender (female)	0,08	3,14	***0,002
Z2	Age	0,00	0,50	0,620
Z2	Age ²	0,00	-0,61	0,541
Z3	Education: elementary school	0,07	1,27	0,204
Z3	Education: vocational exam	0,21	3,78	***0,000
Z3	Education: high school diploma	0,32	5,38	***0,000
Z3	Education: university degree	0,40	5,00	***0,000
Z4	Net income	0,00	5,78	***0,000
Z5	Ability-to-pay ratio	0,03	1,01	0,312
Z6	Chronic illness	-0,04	-1,14	0,256
Z7	Registered work	0,21	6,52	***0,000

Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019

Note: The table summarizes the results of the OLS based regression model. C is the intercept, X is the main explanatory variable and Zs are the control variables. In case of education, the less than 8 classes of elementary school is the reference. Instead of settlement development, we applied district dummy variables. Results are similar when calculating robust standard errors. If coefficients are significant at 1%, 5%, or 10% level, p values are marked with ***, **, or *, respectively.

Further model specifications are in Annex 5.

Opening a bank account is impacted by the banking services' accessibility which is not necessarily reflected in the settlement development indicator. Therefore, we used district dummy variables instead of the settlement development indicator. District dummies proved to be significant, indicating remarkable differences between different regions in terms of the available banking services.

According to Table 6, overdue debts are negatively related to bank accounts: if an individual has overdue debts, the likelihood of using a bank account decreases by 9 percentage points on average ceteris paribus. A registered job increases the chances of using a bank account by 21 percentage points, and, in line with our expectations, the income has a positive impact on bank account ownership. If net income and employment

are left out from the model, the coefficient of overdue debts increases to 15 percentage points.

Women are more likely to open a bank account, but this finding is not robust across different model specifications. The use of a bank account initially increases with age, which is consistent with the results of (Illyés and Varga 2015; Horn and Kiss 2019). However, in our sample, there is no subsequent negative effect of age, probably because we only examined those of active age (18–65 years). Education also has a strong effect on our dataset: the higher the degree, the higher the probability of having a bank account, and the magnitude of this effect is similar to the findings of (Illyés and Varga 2015; Horn and Kiss 2019). The coefficients of the variables “ability-to-pay” and “chronic illness” have the expected sign, but they are only significant in model specifications without the net income and employment variables.

6.5.3. Overdue Debt and Health

In this section, we investigate our third hypothesis i.e., overdue debts have a negative impact on health. Health is measured by a factor derived from 10 variables related to mental and physical health (smoking, alcohol, medication, stressed, hopeless, tired, unhappy, no socializing, dissatisfied with health, and chronic illness) using a principal component analysis. Based on the KMO value (=0.605) and the Bartlett test (p-value is 0.000), we determined one common factor, the so-called unhealthy index. The higher the value of the unhealthy index, the worse the health condition of the individual (the value of the index varies between -1.54 and $+2.37$). In Table 7, the outcome variable is the unhealthy index and the main explanatory variable is overdue debts again, and we control for the important individual-, household-, and settlement-level variables.

Table 7: Overdue debt and health

		Y=Unhealthy index N=481 modified R ² =0,322			Y= Unhealthy index N=480 modified R ² =0,328		
		Beta	t	p	Beta	t	p
C	Intercept	0,17	0,71	0,479	0,12	0,47	0,636
X	Overdue debts in the household	0,23	4,88	***0,000	0,21	4,36	***0,000
Z1	Gender (female)	0,07	1,73	**0,084	0,07	1,56	0,120
Z2	Age	0,01	0,69	0,491	0,01	0,93	0,353
Z2	Age ²	0,00	0,58	0,561	0,00	0,29	0,772
	Education:						
Z3	elementary school	-0,09	-1,14	0,256	-0,09	-1,09	0,276
	Education:						
Z3	vocational exam	-0,29	-3,46	***0,001	-0,28	-3,30	***0,001
	Education: high						
Z3	school diploma	-0,30	-3,33	***0,001	-0,28	-3,12	***0,002
	Education:						
Z3	university degree	-0,51	-4,53	***0,000	-0,51	-4,28	***0,000
Z6	Net income				0,00	0,58	0,560
Z8	Forex loan				0,05	1,08	0,283
	Ability-to-pay						
Z5	ratio	-0,09	-2,51	***0,013	-0,09	-2,52	***0,012
	Settlement						
Z4	development	0,00	-1,35	0,177	0,00	-1,20	0,231
Z7	Registered work				-0,10	-1,83	**0,069

Source: Questionnaire-based survey, small settlements of BAZ County, Hungary, 2019

Note: The table summarizes the results of OLS based regression models. *C* is the intercept, *X* is the main explanatory variable and *Z_k* are the control variable. Results are similar when calculating robust standard errors. If coefficients are significant at 1%, 5%, or 10% level, *p* values are marked with ***, **, or *, respectively.

Further model specifications are in Annex 6.

Variables determining the unhealthy index are known only for the respondents, therefore, in this model, the number of cases is only 480 (some did not provide the information needed to produce the unhealthy index). While in case of employment and the bank account, the negative effects occur only in case of a person with overdue debts; the stress caused by overdue debts can destroy the mental and physical health of the whole family. So, in this model, the main explanatory variable—overdue debts—indicates whether there are overdue debts in a given household or not.

As expected, the sign of the coefficient of overdue debts is positive and significant in both specifications, which means that overdue debts destroy health. Table 7 also suggests that, in absolute terms, the size effect of overdue debts on health is comparable to that of a vocational exam or a high school diploma after completing elementary school. Age is not significant, but gender is, women have slightly worse health in this sample. Education matters again, the more someone studies, the healthier they live. Similarly, the ability-to-pay ratio, which is a more balanced family budget, has a positive impact on health too. Net income is irrelevant, and surprisingly, registered work has a weak negative impact on health. Having had a foreign currency loan in the past has no significant impact. Similarly, the settlement development is not significant, and controlling for this effect at the district level instead of the settlement level does not significantly change the results. The above models, thus, support the negative relationship between overdue debts and health revealed during the in-depth interviews and through the direct inquiries.

6.6. Conclusions

We examine the negative impacts of overdue debts on employment, bank accounts, and health using several methods (in-depth interviews, direct inquiries, and statistical analyses). According to our estimations, overdue debts reduce the likelihood of having a registered job by nearly 14 percentage points. Not having a registered job reduces the probability of owning a bank account by 21 percentage points; in addition, overdue debts further decrease the probability of having a bank account by 9 percentage points. Furthermore, overdue debts have a negative effect on the health of the family members living in the household of the debtor, and this negative effect is roughly of the same magnitude as the positive impact of obtaining a vocational certificate or a high school diploma after completing primary school.

Overdue debts slow down economic growth not only through the decreased labour demand, as (Mian and Sufi 2014; Verner and Gyöngyösi 2020) showed, but also through the decreased labour supply as we presented. Overdue debts can have negative effects not only in a crisis but also in a boom for many decades thereafter.

Our research methodology has limitations. Most of all, one can never be sure that endogeneity is fully excluded from the models. Endogeneity can emerge from simultaneous causality, omitted variables, and measurement errors (Bascle 2008). In our

multivariate regression models with control variables, all three are relevant issues. Therefore, we performed an additional analysis using an instrumental variable (perceived social aversion to overdue debts) as well. Literature review, in-depth interviews, direct inquiries, multivariate analysis, instrumental variable method, and robustness checks strengthen each other and indicate that our results are reliable. The intuitive new channel (escape from debt collection) and the comprehensive and representative survey data also add to the quality of our research.

We can conclude that overdue bills, tax, and bank loans have similar effects on employment, bank services, and health through the escape from debt collection channel. The estimated size effects refer to a disadvantaged population in Hungary, and these proved to be highly significant in economic terms. Results can be generalized for other populations of overdue debtors, too, as debt collection can create perverse incentives and poverty trap mechanisms everywhere if overdue debts are not settled effectively. Of course, side effects can vary widely depending on institutions, personal bankruptcy systems, labour market tendencies, cultural factors, etc.

To reduce the negative social and economic impacts of overdue debts, policymakers should pay more attention to attenuating credit cycles (debt control rules, consumer protection, and other anticyclical policies) and settling non-performing debts, especially in this fragile segment of the society.

Thus, specific debt relief programs are needed, and state intervention can be justified by the positive external effects in terms of employment, growth, tax income, subsidies, health care costs, children's perspective, black economy, etc. Most of all, we argue in favour of more lenient personal bankruptcy regulations to promote the fresh start of overdue borrowers and their families. A bad financial decision should not ruin entire families.

Market-based debt renegotiations should also be more effective for example by using FinTech solutions (for example, online platforms for renegotiations and bargaining, income-contingent repayments, smart contracts and decentralized clearing, etc.). According to (Kshetri 2017; Fernández-Olit et al. 2019) this is an under-researched but promising direction.

Our results indicate that well-designed debt relief programs could be attractive for borrowers, too, as hiding from credit collectors for a lifetime has high personal costs. In these programs, moral hazard issues should be carefully addressed. International evidence suggests, however, that moral hazard can be much less serious as it is widely believed (Guiso et al. 2013; Bhutta et al. 2017).

As far as development policies are concerned, we believe that financial inclusion is not possible without the settlement of existing overdue debts. This must be the first step and well before promoting saving accounts and regular savings plans.

Our database is not suitable for estimating the extent of the problem at the national level. This would require a sufficiently detailed representative sample of the entire population with a large number of observations. A critical study of existing debt relief programs and the development of possible solutions would also require a separate study.

7. CONCLUSIONS AND DISCUSSION POINTS

There are families living in poverty for generations. Our aim is to find solutions for these families to exit the poverty trap, which can be enhanced by the different factors of social exclusion (Banerjee, Banerjee and Duflo 2011). A significant part of the most disadvantaged families is facing overdue debts accumulated in the last decades which have not been handled and remained a problem. Along with Levitas et al. (2007) and Saunders (2011), we argue that social exclusion should be approached as an evolutionary and multidimensional process suggesting that policymakers have to calibrate their policies also in complexity. In this light, we looked at whether the overdue debt has a different – so far not explicitly – recognized role in deepening the poverty trap, which could explain also why known and used policy tools and debt relief programs may not be sufficient for the most disadvantaged and distressed households and individuals.

7.1. Disadvantaged households and individuals in Hungary

In this regard, we looked at Hungarian households living in small settlements in the most disadvantaged county of Hungary, Borsod-Abaúj-Zemplén (BAZ) county. We followed the Sen (1985) definition of poverty. In a multidimensional space, we looked at the role of overdue debt in relation to economic exclusion, financial exclusion, and mental- and physical well-being, therefore, contributing to the scarce literature on the interlinkage between the dimensions of poverty especially outside of the developing countries. Hungary, as part of the EU, is a developed country.

7.2. Overdue debt is a modern pillory

Inspired by Akerlof (1978) and Tirole (2006), we built a theoretical model to explain why profit-seeking lenders are not motivated to offer large debt reductions to bad borrowers who are usually poor and have relatively small debts. Even if the repayment cash-flow would increase significantly, it is more rational to keep these borrowers as deterrent examples presenting toward the other borrowers what happens if somebody does not pay, illustrating the moral hazard the lenders face. The model helps to understand why and when lenders are willing (or not willing) to renegotiate debts; why they try to keep debt

reductions in secret; why eligibility criteria and marketing communication are crucial in the design and operation of large-scale debt relief programs.

7.3. The impact of overdue debt on social exclusion dimensions

When analysing the relationship between overdue debt and economic inclusion, we used employment as a proxy for the latter. There is a strong association between debt and employment. It has been long emphasized that employment affects consumer demand and debt repayment (Kempson, et al. 2004). Most of the literature focused on the macro-economic consequences and found that the relationship between employment and debt problems is labour demand-driven (Mian and Sufi 2014; Verner and Gyöngyösi 2020). Recently, researchers started exploring the reverse impact between employment and debt. Mian and Sufi (2014) found that the decline in housing net worth leads to a decline in labour demand. Verner and Gyöngyösi (2020) found evidence that foreign exchange loans lead to a decline in aggregate demand. Some research shows that labour supply can be impacted through housing lock (Bernstein and Struyven, 2017), housing debt overhang (Bernstein 2017, 2021), financial distress (Herkenhoff 2019; Dobbie et al. 2020) and vacancy posting effect (Donaldson et al. 2019; Apergis et al. 2020).

We found that overdue debts reduce the likelihood of having a registered job due to voluntary economic exclusion driven by the fear of debt collection (Berlinger, Dobránszky and Molnár 2021a and Berlinger, Dobránszky and Molnár 2021b). This suggests that debt reduction policies may be beneficial at the level of society. To provide evidence, we followed a direct approach (based on the answers given to the questionnaire and in the in-depth interviews) and a quantitative statistical approach. We developed linear probability models and tested the results with binary logistic regression and probit models controlling on socio-economic variables (such as gender, age, education, settlement development, etc.). All models led to similar results. An analysis based on an instrumental variable, that is the perceived social aversion with regards to overdue debts, also strengthens our findings.

Our research contributes to the literature on the relationship between indebtedness and employment in three ways: it provides empirical evidence on impact of overdue debt on labour supply, it extends the literature by addressing any type of overdue financial

obligation, not only specific consumer or mortgage loan related debt-overhang, and it fills the literature gap by addressing distressed households.

In our analysis, we have chosen the usage of a bank account as a proxy for financial inclusion. Similar to the relationship between over-indebtedness and employment, there is extensive literature showing that there is a relationship between debt issues and financial inclusion and that financial inclusion has an impact on debt (for example, Fanta and Makina 2019).

We found that overdue debts reduce the likelihood of having a bank account due to voluntary financial exclusion driven by the fear of debt collection. We also found that this relationship is only significant statistically if employment and income are not included in the model as control variables.

Our research fills the conceptual gap in literature exploring the impact of overdue debt on financial inclusion and contributes to the literature providing evidence on the impact of overdue debt in distressed households on financial inclusion.

To address the third dimension of social inclusion, we also looked at the impact of overdue debt on mental and physical well-being that latter being defined by the so-called unhealth index, which is based on mental- and physical health indicators of individuals. The link between household debt and mental- and physical health issues (e.g., Bridges and Disney 2010; Sweet et al. 2013; Krumer-Nevo et al. 2017) has been proven in a vast amount of research. There have been attempts to recognise a two-way relationship and the fact that this positive feedback effect can deepen the poverty trap (e.g., Krumer-Nevo et al. 2017; Ntsalaze and Ikhilde 2016), but evidence for this is scarce and mainly focuses on one sub-element of physical- or mental health, such as the impact of debt on cancer (for example Gilligan et al. 2018).

We found that overdue debts are linked to decreased health. To provide evidence, we followed a direct approach (based on the answers given to the questionnaire and in the in-depth interviews) and a quantitative statistical approach. We developed linear regression models controlling for socioeconomic variables (such as gender, age, education, settlement development, employment, etc.). Our research, in this regard, contributes to

the literature and fills the gap by providing empirical evidence related to the impact of overdue debt on mental and physical well-being.

To sum up the impact of overdue debt on social inclusion factors and according to our estimations, overdue debts reduce the likelihood of having a registered job by nearly 14 percentage points. Not having a registered job reduces the probability of owning a bank account by 22 percentage points and, in addition, overdue debts further decrease the probability by 5 percentage points. In addition, overdue debt also has a negative effect on the health of those living in the same household as the debtor, and this negative effect is greater than what a combined high school diploma and diploma could compensate for (0.4 versus $1.08 - 0.72 = 0.36$).

Overdue debts, thus, slow down economic growth not only through labour demand, as Verner and Gyöngyösi (2020) have shown, but also through labour supply. Furthermore, overdue debts not only have a short-term effect after the crisis but bears an impact on economic activity for decades.

7.4. Limitations of the research

Our database is restricted to the rural settlements of a disadvantaged county in Hungary. It would be important to extend this research to national or even to regional level analyzing the role of overdue debt of distressed households in inducing poverty trap.

Furthermore, the information provided by this database may be limited in terms of the variables. First, variables that are used for calibrating the theoretical model may not be the best fit. Measuring the ability and willingness to pay, which is a crucial element may not be fully reliable and well defined. It is also questionable how to measure best the personal cost of becoming a bad borrower. It should be also noted that the assumptions of the theoretical model may be restrictive, for example, on the homogeneity of the good and bad borrowers or on the effect of policy interventions addressing the personal cost of becoming a bad borrower, which in our case is implicit.

Second, there may be variables that could be left out as confounders. Personality traits could be one example of such variables. This, on the one hand, can cause bias in our results, but it also suggests the need for further research focusing on the different

personality traits of people living in poverty. The further bias of our findings may occur due to the fear of the respondents. Although there is no reason to assume that the respondents did not answer honestly, not paying debt may be seen as a shameful act. Additionally, it can create a fear of debt collection. This could lead to underestimated results if respondents do not or only partially share information on overdue debt.

Additionally, there might be other channels through which overdue debt has an impact on the dimensions of social inclusion. For example, overdue debt can also impact labour supply through deteriorating creditworthiness (Dobbie et al. 2020) or through deteriorating an employee's chances of finding, retaining, or selecting work conditions (Herkenhoff 2019) and finally through the deterioration of collateral value in case of mortgage loans (Bernstein and Struyven 2017). The in-depth interviews confirmed that the channel we examined – i.e., voluntary exclusion due to fear from deduction - is relevant in this relationship. Nevertheless, extending the research towards additional channels would contribute further to this field.

There are also two methodological remarks which are worth further attention. First, one might argue that the usage of bank account is not an appropriate proxy for financial inclusion, as financial inclusion itself is also multidimensional (Honohan 2008; Allen et al. 2012; Chan 2017). Given that the availability of other financial inclusion indicators is restricted and that the main aim of this research was to see if overdue debt causes voluntary exclusion, based on (Kempson et al. 2000; Devlin 2005; Fitzpatrick 2015 and Krumer-Nevo et al. 2017) we used this variable to describe the financial inclusion dimension. Second, it may be questioned whether the used instrumental variable is fit for purpose. Although in our database, both statistically and logically, we can assume that the perceived social aversion with regards to overdue debts affects the repayment of loans but does not directly affect employment, only through overdue debts, and hence it is fit for becoming an instrumental variable when analysing the impact of overdue debt on employment. The instrumental variable, however, should be reconsidered if the research is extended to other populations.

7.5. Answering the research question

Taking into consideration the literature in the field, our findings and the limitations of our research, and in response to the research question, we conclude that overdue debt has a

negative impact on economic- and financial inclusion through voluntary exclusion driven by the fear of debt collection. Overdue debt also has a negative impact on physical- and mental health due to stress initiated by debt overhang and the lack of socializing.

7.6. Policy implications and further research

Our theoretical model 4 shows that there is a market failure. Under normal economic conditions, lenders have no interest to offer payment reductions if non-performing borrowers are few, have small debts, and are difficult to reach. In this situation, poor debtors serve better as deterrents, similarly if we put them into a pillory. This market failure calls for regulatory intervention.

From the above-described model, it follows, that if the state intervenes for the sake of positive external effects and subsidizes the scheme, then making the program feasible, it can create a large economic and social value. Moving people out of the shadow economy will bring aggregate economic value, for example through paying taxes, participating in financial services and through ensuring a healthy labour force, but also through enhanced entrepreneurship, innovation, increased competitiveness (Enyedi-Tamási 1995; Dell'Anno et al. 2007; Dreher et al. 2009; Schneider and Williams 2013; Balog 2014; Goel et al. 2019; Fenyvesi-Vágány 2020). State intervention in favour of poor debtors, however, can be justified not only from the point of view of efficiency but also from a human ethical perspective. Even if physical pillories were a cost-effective tool to influence the behaviour of the large majority, civilized societies do not use them anymore. For the same reasons, financial pillories should also be given up.

In our empirical research, we show that overdue debt contributes to the poverty trap. In order to reduce the negative social impact of overdue debts, policymakers should pay more attention to easing credit cycles and settling non-performing debts, especially in this fragile social group. Policy interventions should break the cycle along the line moving from overdue debt towards social exclusion dimensions.

It should be noted that the financial implications for lenders in case of loan renegotiations and debt reduction for those who are trapped in poverty due to overdue debts could be positive, as in the current situation the real value of these loans is zero, given that these debtors are not able to pay. In the case of full debt reduction, the value of the loan would

remain zero. Negotiating any debt repayment would, therefore, have a positive impact on banks' balance sheets. However, our theoretical model also brings attention to the risk of moral hazard. The magnitude of the risk of losing "good borrowers" due to renegotiating the debt with "bad borrowers" is difficult to measure and is dependent on a number of different factors, such as culture, economic situations, education level, etc. Therefore, it is essential to calibrate regulatory interventions in a way that strikes a balance between the social value of these interventions and moral hazard. I recommend looking at regulatory solutions and their effectiveness in the European Union. One example is Walter and Krenchel (2021), who examined and compared the regulatory solutions for personal bankruptcy in the European Union or Molnár and Havas (2019) who shares the experience of the Hungarian social microfinancing program.

Based on our findings, we recommend considering a wide range of policy measures in the context of Hungary such as improving the effectiveness of the private renegotiation process (online bargaining platform, randomized and controlled experiment to find the best practice of debt collection, etc.), reopening the subsidized house renting program, and/or reforming the personal bankruptcy regulation in the spirit of promoting the "fresh start" of the debtors. A new wave of defaults is expected to come in line with the present crisis of the pandemics and the war in Ukraine which urges innovations in debt management practices even more.

In light of the above, further research would be necessary in different directions. First, further research would be welcome to extend the theoretical model by bringing in additional complexity, for example by releasing the homogeneity assumption related to the borrowers or by extending the period. Finding empirical evidence on the magnitude of the potential market failure would also help to better calibrate any possible regulatory intervention.

We also see a need for further research on what type of different regulatory solutions addressing the overdue debt-induced poverty trap there are and on their effectiveness. Further research should also address the role of willingness and ability to pay in the effectiveness of such policy tools as well as possible ways to measure ability and willingness to pay.

Given the constraints of the county-level data we use and the fact that scarce research has been conducted in developed countries on this matter, similar research at a country level would be invaluable when addressing social exclusion and poverty trap in Hungary, or even at regional or EU level given the similar socio-economic conditions in the Central-Eastern European Region. Additionally, given that we faced several crises in the meantime, it would be important to understand, how these crises impacted the situation of the most vulnerable society.

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GLOSSARY

Datio in solutum: regulatorz institution that allows consumers to hand in the immovable asset or anz other asset, if applicable, subject to a mortgage securing a credit agreement, in order to cancel their loan debt.

Debt relief: is the partial or total forgiveness of debt or the slowing or stopping of debt growth. Debt relief programs help individuals and households to reduce and eventually eliminate their debt.

Distressed households: the household is in a condition in which the household cannot generate sufficient revenues or income to meet or pay its financial obligations.

Economic exclusion: lack of capabilities to access employment.

Economic inclusion: everyone has the right to work.

Financial exclusion: lacking capabilities and or opportunities to access financial services.

Financial inclusion: the availability and equality of opportunities to access financial services, including banking loan, equity, insurance products, having a bank account, etc.

FOREX loan: foreign exchange loan is a loan that is denominated in a currency other than. The domestic currency of the household.

FX loan: foreign exchange loan is a loan that is denominated in a currency other than. The domestic currency of the household.

Indebtedness: the condition of owing money or the amount of money owed.

Multidimensional poverty: A person who is poor can suffer multiple disadvantages at the same time – for example they may have poor health or malnutrition, a lack of clean water or electricity, poor quality of work or little schooling. Focusing on one factor alone, such as income, is not enough to capture the true reality of poverty. Multidimensional poverty measures can be used to create a more comprehensive picture. They reveal who is poor and how they are poor – the range of different disadvantages they experience.

Non-performing: means overdue for more than 90 days. Non-performing loan is a loan if its instalments have not been paid for more than 90 days. Non-performing portfolio is the stock of non-performing loans. Non-performing borrower is the borrower who has not paid loan instalments for more than 90 days.

Over-indebtedness: An over-indebted household is, accordingly, defined as one whose existing and foreseeable resources are insufficient to meet its financial commitments without lowering its living standards

Overdue debt: a debt is overdue as soon as payment is late.

Poverty: lacking capabilities. Poverty is the state of not having enough material possessions or income for a person's basic needs. Poverty may include social, economic, and political elements.

Poverty trap: A poverty trap refers to an economic system in which it is difficult to escape poverty

Registered job: is a job, where the employee has a legal contract to work and pays taxes after income. It can be part-time or full-time, temporary or permanent.

Renegotiating debt: the process of paying a debt over a longer period of time than originally agreed or paying back less than the original debt.

Social exclusion: Social exclusion is the process in which individuals are blocked from (or denied full access to) various rights, opportunities and resources that are normally available to members of a different group, and which are fundamental to social integration and observance of human rights

within that particular group (e.g., housing, employment, healthcare, civic engagement, democratic participation, and due process)

Social inclusion: Social inclusion is defined as the process of improving the terms of participation in society, particularly for people who are disadvantaged, through enhancing opportunities, access to resources, voice and respect for rights

ANNEXES

ANNEX 1 - Indicative list of household variables and their descriptive characteristics

The database was built up for the analysis and variables have been defined in three steps. First, based on the raw data, household and respondent variables have been identified. Second, based on the household data individual dataset has been built up. In case of some variables, direct values have been assigned to the individuals by the respondents. In case of other variables, to individuals from the same household, the same values have been assigned in case the variable was household data. After transformation 1794 individuals has been listed. In the below list we only indicate the descriptives of some of the most important basic variables. For our analysis, if it was necessary, variables have been recoded and/or transformed into new variables and further variables have been computed.

ID: numbers the questioned households from 1 to 504. This variable is to identify the observation if necessary, this is a technical variable. If we do not indicate the number of observations used for the descriptive statistics, it means that all 504 observations have been included.

Working day (Working Day): this variable is indicating whether the questionnaire was filled in on a working day. Categorical, nominal, string variable. If the value is “y”, then the respondent was asked on a working day. The questionnaire for each respondent contained the date of the interview. Saturdays, Sundays, and public holidays were considered resting days. According to the statistics, 68.3% of the respondents were interviewed on a working day.

Village (Village): The name of the Village is also identified by the ZIP code. Categorical, nominal, string variable.

Property type: indicates in which type of housing the respondent lives. Categorical, nominal, numeric variable, which was defined based on the property type string variable, based on question 04 of the questionnaire. There are 8 property types under this variable: 1=old farmhouse; 2=apartment in family house; 3=block of flats from 70s; 4=family house from later than 70s; 5=state loan-based house; 6=flat; 7=holiday home; 8=other. Only observation 12 falls under another type of property, which is a house provided by the employer as part of the contract, i.e., a service house. To avoid excluding this observation from the analysis as a potential outlier based on the property type, we integrate this category into other categories. Although we do not know from the data, what kind of property it is, we assume an average quality and therefore assign a value of 4 indicating later built family house. More than 30% of the respondents live in flats from before the 70s, nearly 30% of the respondents live in an old farmhouse and around 20% in a family house built after the 70s.

Post office in the village (05.1PostOffice): this categorical, nominal, numeric variable indicates if there is a permanent post office in the village, based on question 05.1 of the questionnaire. If there is a post office, the value of the variable is 1, if there is not, the value of the variable is 2.

Savings bank in the village (05.2SavingsBank): this categorical, nominal, numeric variable shows if there is a savings bank in the village, based on question 05.2 of the questionnaire. If there is the value of the variable is 1, if there is not, the value of the variable is 2.

Bank affiliate in the village (05.3Bank): this categorical, nominal, numeric variable shows if there is a bank affiliate in the village, based on question 05.3 of the questionnaire. If there is the value of the variable is 1, if there is not, the value of the variable is 2.

Cash machine in the village (05.4CashMachine): this categorical, nominal, numeric variable shows if there is a cash machine in the village, based on question 05.4 of the questionnaire. If there is the value of the variable is 1, if there is not, the value of the variable is 2.

Number of persons living in the Household (k2NrPersonsHH): this variable indicates that including the respondent, how many persons are living in the same household in terms of how many persons are living in the same property and contributes (negatively or positively) to the financial situation of the household in question. Scale variable. This variable has been determined based on k2 question of the questionnaire. The smallest households are one person households, i.e., the respondent lives on his/her own. The biggest households have 16 members. The average size of a household in terms of membership is between 3 and 4 (statistically 3.56), most households have 3 members (mode is 3), median is 3, standard deviation is 1.989, the skewness is 1.559 and the kurtosis 4.579. The following observations are outliers: 5; 257, 273, 281, 295 and 444, 474. According to the Hoaglin-Iglewicz multiplier method, only observations 295, 444 and 475 are outliers.

Number of Children (k3NrChildren): this variable indicates how many children the respondent has within or outside the household in question. Scale variable which has been quantified based on the answers received to question k3 of the questionnaire and based on 503 observations. The number of children per respondent varies between 0 and 11, with an average between 2 or 3 children (statistical mean is 2.37). Most respondents have two children (mode is 2) and the median is 2. Observation 34 has not indicated a value, so we assigned a value of 0, due to the fact that the respondents mentioned that the households have 2 members under question k2 and under question m1-m8 (s)he indicated that there are two legal age members in the household. The standard deviation is 1.785, skewness 1.113 and kurtosis 1.947. The following observations were considered to be outliers by SPSS: 251, 273, 278, 295, 356, 486, 494 and 497. Based on the Hoaglin-Iglewicz multiplier method, only observation 486 is an outlier with this household raising 11 children.

Number of legal age adults in the household (m1NrAdultsHH): this variable indicates how many of the household members are legally defined as adults including the respondent if (s)he is of legal age, i.e., above the age of 18. Scale variable which has been defined based on questions m1-m8 of the questionnaire. The number of adults in the households vary between 1 and 7 with an average between 2 and 3 (statistical mean is 2.33). Most households have 2 adults in the household (mode is 2). Median is 2, standard deviation is 1.006. Skewness is 1.326 and kurtosis 2.459. The following observations were considered to be outliers by SPSS: 295, 355, 367, 471, 472, 475 and 478. Based on the Hoaglin-Iglewicz multiplier method, observations 257, 295, 297, 355, 367, and 475 and 501 are outliers.

Respondent's Gender (s1.2RespGender): indicates the gender of the respondent. Categorical, nominal, numeric variable based on question s1 sub-question 2 of the questionnaire. If the respondent is male, the value is 1 and if the respondent is female, the value of the variable is 2. The overwhelming majority of the respondents (more than 70%) is female.

Respondent's Age (s1.3RespAge): indicates the age of the respondent. Scale variable which has been calculated based on question s1 sub-question 3 of the questionnaire from the year of birth. The youngest respondent is 18 the oldest 79 years old. The average age of respondents is in their forties (mean is 44.45, median is 45 and mode is 49). Standard deviation is 12.817, Skewness is -0.154 and kurtosis is -0.921. No outliers were identified.

Respondent's race (RespMinority): categorical, nominal, numeric variable indicating whether the respondents is from the roma minority, in which case the variable has a value of 1. The variable is based on the categorical, nominal, string variable of the questionnaire. In the questionnaire, this characteristic was based on the opinion of the questioning person. In 13 cases (observations, 74, 82, 179, 202, 210, 219, 222, 357, 388, 446, 449, 473, 488), the questioning person could not decide. In these cases, we assigned 1 as a value to these observations. 57% is non-minority.

Respondent's highest education (sx.4RespEdu): this variable indicates the respondent's highest education. Categorical, nominal, numeric variable which is based on question sx.4 of the questionnaire and the related string variable. The variable has 6 values indicating with the following meaning: 1= less than 8 primary school class; 2= 8 years of primary school; 3=secondary school providing profession; 4=A-levels; 5=college degree; 6=currently studying in high school. To develop the data for this variable we processed the raw data. Data on individual household members' education levels is available. The respondent's education level needed transformation from string to numeric data. For this we used the Microsoft Excel IF function. We included the "currently studying in high school" values under value 2=8 years of primary school. It should be noted that there is a motivation factor in this variable: studying as a grown-up may indicate a positive attitude towards improving the individual's financial situation. Besides, it is also unknown what the purpose of the secondary school study is; whether it is to get a higher degree than 8 years of primary school including profession and/or A levels or getting A-levels). In fact, these people surely have 8 primary schools finished. Given that there are only two observations representing only 0.4% of the full sample in this category, not taking these impacts into account will not significantly bias our analysis. Most (37.7%) of the respondents have 8 years of primary school education. 29.8% has secondary school education with a profession and another 19.6% of the respondents have finished their A-levels.

Household's highest education (sx.4EduHH): this variable indicates the household's highest education. Categorical, nominal, numeric variable which is based on question sx.4 string of the questionnaire, and the related string variable. The variable has 6 values indicating with the following meaning: 1= less than 8 primary school class; 2= 8 years of primary school; 3=secondary school providing profession; 4=A-levels; 5=college degree; 6=currently studying in high school. To develop the data for this variable we processed the raw data. Data on individual household members' education level is available. The household's education level needed transformation from string to numeric data. For this, we used the Excel IF function and then the Excel Max function to select the maximum value amongst members of each household. Most of the households have at least one member with a profession and some secondary school education (33.3%).

Household legal job (m1LegalJobHH): this variable indicates if there is one member of the household who is legally employed, i.e., have a permanent (full time- or part-time) or temporary registered job. Categorical, nominal numeric variable. This variable has been developed based on question m1 of the questionnaire by looking at the economic activity

of each household member and we gave a value 1 to those households where at least one member has an 8-hour permanent and registered job, a part-time registered job or a temporary registered job. Those households where this condition did not apply were given a value of 0. It must be highlighted that the members of this household are not necessarily unemployed. They can have social work, non-registered (i.e., no taxes and employer's contributions are paid after the employee) temporary jobs, work abroad, maternity leave, non-registered inactive, retired, student, or other. 39.9% of the households do not hold a legal job.

Household 8-hour job (m18hourJobHH): this variable indicates if there is at least one member of the household who is employed in an 8-hour job. Categorical, nominal, numeric variable. This variable has been developed based on question m1 of the questionnaire by looking at the economic activity of each household member and we gave a value of 1 to those households where at least one member has an 8-hour permanent and registered job. Those households where this condition did not apply were given a value of 0. 43.5% of the households do not hold a legal job.

Respondent has a bank account (m2RespBankAccount): This variable indicates if the respondent has a bank account (with value 1) or not (with value 0). Categorical, nominal numeric variable. This variable is based on question m2 of the questionnaire. 40.9% of the respondents have no bank account.

In the household there is a bank account (m2BankAccountHH): This variable indicates if there is at least one member of the household who has a bank account (with value 1) or not (with value 0). Categorical, nominal numeric variable. This variable is based on question m2 of the questionnaire. 30% of the households have no bank account.

Household Income from last month (m3NetIncomeLastMonthHH): this variable indicates the household's net income from the previous month expressed in thousand HUF, including the pension, caretaker's income, unemployment benefit, maternity benefit but excludes the family subsidies and subsidies for people in employment age). Scale variable which has been quantified based on question m3 of the questionnaire. The minimum is 0 and the maximum is 1 127 thousand HUF. The households' average last month net income is 223.3 thousand HUF with a standard deviation of 155.2 thousand HUF. Median is 190 thousand and the mode is 54 thousand HUF. Skewness is 1.361 and kurtosis 3.101. There are a significant number of outliers, which should be further explored as different clusters within the variable. Therefore, looking at outliers under this variable will only be meaningful if we filter the data further.

Household has a bank loan (m5BankLoanHH): this variable shows if any of the household members have a loan from a financial services provider (with a value 1) or not (with a value 0). Categorical, nominal, numeric variable which is based on question m5 of the questionnaire. The variable was defined by looking at what type, if any, of loan each household member has. If at least one household member had a consumer loan, mortgage loan, car loan, personal loan, or any other bank loan. 47.2% of the households have a bank loan.

Amount of monthly loan instalments in thousand HUF (m6InstalmentMonthHH): this variable indicates the amount of the monthly instalments the household is paying in thousand HUF. Scale variable calculated based on m6 of the questionnaire. It is the sum of all instalments paid by all household members in the given household. We need to highlight here, that the questionnaire gives one answer to two different questions asked:

1. How much is the monthly loan instalment of the given household member?
 2. How much the given household member is paying monthly for loan instalments?
- Taking into account the fact that we are running an analysis on the consequences of non-performing loans, we assume that the answer to these questions can be two separate answers in case the household is not able/willing to pay (a part) of the instalments. In this regard, this variable need to be controlled together with g8 and g9 questions in the case of households where there are non-performing loans. In the case of households, where non-performing loans are not disturbing the household's financial liquidity, we assume that the household is paying the amount they "should" contractually pay. The monthly instalments vary between 0 and 250 thousand HUF. Most households do not pay instalments (mode and median are 0). A household on average is paying 15.7 thousand HUF for instalments. Standard deviation is 26.7 thousand HUF, which is high based on the CV. Skewness is 2.989 and kurtosis is 15.052. There are a significant number of outliers, which is due to the fact that the majority of the households do not have monthly instalments. Therefore, looking at outliers under this variable will only be meaningful, if we filter the data for financial obligations and only look at those households which have a certain amount of instalments to pay.

Household has non-performing bank loans (m7NPLHH): this variable indicates if the household in question has a non-performing loan which is lent by financial services institutions, including consumer loan, mortgage loan, car loan, personal loan, and/or any other bank loan. If yes, the variable has a value of 1, if no, the value of the variable is 0. Categorical, nominal, numeric variable based on question m7 of the questionnaire. To transform raw data into the NPL variable, we filtered the household type data that we already transformed from text format to number categories, indicating the loan categories by 1, 2, 3, 4 and 5. We filtered one-by-one all persons in all household and one-by-one their different types of debts. We summarized the 1-5 category values. To create a variable that shows which household has a non-performing payment obligation, we created a variable that indicates that at least one person in the same household has a non-performing financial obligation. If there was no data available, we assumed the value of the variable is 0. If the non-performing loan was indicated that it is a credit card obligation, it was classified as NPL. The variable shows that 16.7% of all households have NPLs.

Household has non-performing public debt (m7NPPDHH): this variable indicates if the household in question has a non-performing public debt, including any outstanding obligation on the telephone, utilities, house rent, non-paid tax, or other public debt. If yes, the variable has a value of 1, if no, the value of the variable is 0. Categorical, nominal, numeric variable based on question m7 of the questionnaire. To transform raw data into the NPPD variable, we filtered the household type data (utility type financial obligation and tax type financial obligation) that we already transformed from text format to number categories, indicating the loan categories by 6 and 7. We filtered one-by-one all persons in all households and one-by-one their different types of debts. We summarized the 6-7 category values. To create a variable that shows which household has a non-performing payment obligation, we created a variable that indicates that at least one person in the same household has a non-performing financial obligation. If there was no data available, we assumed the value of the variable is 0. In case there was no indication based on the type of non-performing financial obligation, but there was an indication on the value of the outstanding amount, for example in the case of observation 11, which is a one-person household, we assumed that there was an NPPD based on the amount. Similarly, observation 55, one-person household, where the person indicated that he/she has one type of NPL, however, gave two different amounts for values. In this case, we assume

that it belongs to two separate tax debts, and cumulated them under the same type of NPL, namely number 7 of m3. Respondent 251 indicated that there is no NPL. However, when the value was asked, said 200. This was added to NPPD. The variable shows that 14.1% of all households have NPLs.

Household has non-performing microloans (m7NPMLHH): this variable indicates if the household in question has a non-performing microloan, such as non-reimbursed debt from other private persons (e.g. debt in the grocery store) or another micro borrowing. If yes, the variable has a value of 1, if no, the value of the variable is 0. Categorical, nominal, numeric variable based on question m7 of the questionnaire. To transform raw data into the NPML variable, we filtered the household type data that we already transformed from text format to number categories, indicating the loan categories by 8 and 9. We filtered one-by-one all persons in all households and one-by-one their different types of debts. We summarized the 8-9 category values. To create a variable that shows which household has a non-performing payment obligation, we created a variable that indicates that at least one person in the same household has a non-performing financial obligation. If there was no data available, we assumed the value of the variable is 0. In the latter case, the variable shows that less than 1% of all households have NPMLs.

Total average monthly income (g3TotalAvgMonthlyIncomeHH): this variable indicates how much is the total average monthly income the Household gets to hand in thousand HUF. This includes all deductions. Scale variable based on g3 of the questionnaire. Descriptive statistics are indicated based on 500 observations. The minimum monthly income/household is 22 thousand HUF. The maximum is 1120 thousand HUF. Average monthly household income is 240.6 thousand HUF, but most of the households are earning less than this (mode and median are 200 and 206 thousand HUF respectively). There are 4 cases (observations 83, 298, 320, 353) where no input was given. We looked at other characteristics of these observations (number of household members, education, employment, age, health indicators, etc.). Based on the other characteristics, for observations 83, 298 and 320, we assume that the income received last month based on question m3 is a good estimate of the missing amount. For observation 353, looking at the other variables such as last month's income, health indicators, self-evaluation on health and wealth, we assume that the average monthly income is very low and assigned the value of the received subsidies to this observation. Skewness is 1.362 and kurtosis is 3.154. Standard deviation is 152.065 thousand HUF. There are a significant number of outliers, which should be further explored as different clusters within the variable. Therefore, looking at outliers under this variable will only be meaningful if we filter the data further.

Emotional judgement on the financial situation (g4RespJudgementHH): this variable indicates how the respondents judge his/her household's financial situation. Categorical, ordinal, - after transformation of the raw data - numeric variable which is based on question g4 of the questionnaire. Under observation 223, the respondent has not given any answer to this question. Looking at his answers to the other questions and judging based on the financial situation of the household with regards to income expenditures and the financial obligations, and in order not to lose an observation, we classified this respondent under 5 (i.e., they live in poverty). It should be noted that not giving an answer, in this case, has power.

32.5% of the respondents say that their family lives well with some financial planning. 30.8% says they are on the edge of managing and 25.8 of the respondents have a financial issue every month. 6.3% believes that they live in poverty.

The reason that the household does not have a bank account: deducting the debt (g5ReasonNoBankAccDeductionHH): this variable reflects the respondent's opinion on whether the reason for no one in the household has a bank account is the potential deductions. Categorical, nominal, numeric variable, after transformation of the string variable. This variable was defined based on question g5 of the questionnaire. If the value is 1, the respondent believes that the indicated reason is valid for not having a bank account. If the value is 0, the respondent believes that it is not the reason. In case if the value of the variable was NA, i.e., there was no data available because the household does have a bank account, the value has been set to 0. Logically, if the household has a bank account, the reason for not having a bank account cannot be valid. It should be noted here, that based on the variable m2BankAccountHH, only 30% of the households have no bank account. The bias of the non-reason, therefore, is significant. For around one fifth (6% of all households) of the relevant households, the possible deductions of instalments/financial obligations from the bank account is considered as a reason for not having a bank account.

Household member with a deduction from salary due to non-performing financial obligation (g6SalaryDeductionNPLHH): this variable indicates whether there is anyone in the given household, from whose salary a certain amount is deducted due to any non-performing financial obligation. Categorical, nominal, numeric variable based on question g6 of the questionnaire. The variable has two values: 0 indicating if there is no such household member, 1 indicating if there is. If there was no answer (including one observation where the respondent indicated that (s)he does not know) we assumed a value of 0.10% of all households faces deduction from salary on this account.

Household member with a deduction from a bank account due to non-performing financial obligation (g7BankAccountDeductionNPLHH): this variable indicates whether there is anyone in the given household, from whose bank account a certain amount is deducted due to any non-performing financial obligation. Categorical, nominal, numeric variable based on question g6 of the questionnaire. The variable has two values: 0 indicating if there is no such household member, 1 indicating if there is. If there was no answer, we assumed a value of 0.10% of all households faces deduction from salary on this account.

Information on personal default (g10RespPersonalDefault): this variable reflects whether the respondent knows anything about personal default. Categorical, nominal numeric variable transformed from a string variable based on question 10 of the questionnaire. The values of the variable can be 1 (yes, (s)he has heard of it), 2 (yes, (s)he has used it) and 3 (does not know about it). Observation 114 did not have a value for this variable. We assigned a value of 0, following the majority's knowledge about the existence of this institution. The overwhelming majority of the respondents (71%) has not heard of this legal institution.

Household ever had an FX loan (g11FXLoanHH): this variable indicates whether any member of the household has ever had an FX loan. Categorical, nominal, numeric variable based on question 11 of the questionnaire. The variable has two values: 0 indicating that the household never had an FX loan, 1 indicating that at least one member of the household had an FX loan. 19.8% of all households have had FX loan. Respondent of observation 355 did not know, we assigned a 0 value to this household.

Respondents know anyone who does not have a registered job due to outstanding financial obligations (g21RespSanctionLegalJob): this variable indicates if the respondent knows

anyone who is not taking any registered legal job because of the fear of deductions due to outstanding financial obligations. Categorical, nominal and after transformation of string variable, the numeric variable which was developed based on question g21 of the questionnaire. The variable can have 6 values: 0=does not know anyone; 1=the respondent; 2=a household member; 3=wider family;4=in the village; 5=acquaintance. We changed the value of observation 1 who indicated that he does not receive his income, therefore 1 was assigned to this observation. 6.2% of all households faced a situation like this, and 48.6% knows someone who was/is in this situation but mainly in wider circles.

Respondents know anyone whose health was deteriorating due to outstanding financial obligations (g21RespSanctionHealth): this variable indicates if the respondent knows anyone whose health deteriorated because of the fear of deductions due to outstanding financial obligations. Categorical, nominal and after transformation of string variable, the numeric variable which was developed based on question g21 of the questionnaire. The variable can have 6 values: 0=does not know anyone; 1=the respondent; 2=a household member; 3=wider family;4=in the village; 5=acquaintance. We changed the values of observations 358, 367, 435, 438 who indicated that s(he) had to divorce, therefore 1 was assigned to these observations. 12.1% of all households faced a situation like this, and 58.3% knows someone who was/is in this situation but mainly in wider circles.

Respondents know anyone who does not open a bank account due to outstanding financial obligations (g21RespSanctionBankAcc): this variable indicates if the respondent knows anyone who does not open a bank account due to outstanding financial obligations. Categorical, nominal and after transformation of string variable, the numeric variable which was developed based on question g21 of the questionnaire. The variable can have 6 values: 0=does not know anyone; 1=the respondent; 2=a household member; 3=wider family;4=in the village; 5=acquaintance. We changed the value of observation 1 who indicated that he does not receive his income, therefore 1 was assigned to this observation. 7.8% of all households faced a situation like this, and 44.8% knows someone who was/is in this situation.

Respondent's opinion on whether the non-performing financial obligations are a problem (g22RespNPLProblemEnviron): this variable reflects the respondent's opinion on how big an issue the non-performing financial obligations constitute in their direct environment. Categorical, ordinal, nominal variable based on question 22 of the questionnaire. Values of the variable are as follows: 1=not a problem at all; 2=rather not a problem; 3=more yes; 4=completely. 68.2% of the households consider it a problem in their direct environment.

Respondent's opinion on whether the non-performing financial obligations are a problem (g22RespNPLProblemVillage): this variable reflects the respondent's opinion on how big an issue the non-performing financial obligations constitute in their village. Categorical, ordinal, nominal variable based on question 22 of the questionnaire. Values of the variable are as follows: 1=not a problem at all; 2=rather not a problem; 3=more yes; 4=completely. 81.1% of the households consider it a problem in their village.

Respondent's opinion on whether the non-performing financial obligations are a problem (g22RespNPLProblemEnviron): this variable reflects the respondent's opinion on how big an issue the non-performing financial obligations constitute in Hungary. Categorical, ordinal, nominal variable based on question 22 of the questionnaire. Values of the variable

are as follows: 1=not a problem at all; 2=rather not a problem; 3=more yes; 4=completely. 88.3% of the households consider it a problem in their direct environment.

Household member taking medication (e1MedicationHH): this variable indicates whether any of the household members regularly take medication. Categorical, nominal, numeric variable which is based on question e1 of the questionnaire. The variable can take the following values: 0 indicating that no one regularly takes medication; 1 with the meaning that the respondents take medication; 2 indicating that household member(s) other than the respondent takes medication and 3 meaning that both the respondent and another household member (s) as well takes medication. The vast majority of the households have at least one member who regularly takes medication (59.1%).

Household's ability to pay for medication: (e2PayMedicationHH): this variable indicates if the household is able to pay for medication. Categorical, nominal, numeric variable which is based on question e2 of the questionnaire. The variable can take 5 values: 0 = no, they cannot pay for medication; 1=yes, there is always money for this; 2=yes, it is covered by social health insurance; 3=most of the time, yes, but sometimes no; 4=most of the time no. Roughly one quarter (26.1%) of all households have at least occasionally difficulties with paying for medication. It should be noted that based on the answers indicated in the raw data, the respondents do not necessarily link this question to regular medication (i.e., to question e1). Respondents, who indicated that they do not take regular medication, gave different values to e2.

Respondent's satisfaction with own health (e3RespSatisfactionHealth): this variable reflects how satisfied the respondents are with their own health. Categorical, ordinal, numeric variable which was developed based on question e3 of the questionnaire. The variable has the following values: 1=completely satisfied; 2 = rather satisfied; 3 = so-so; 4=rather dissatisfied; 5= dissatisfied. Nearly half of the respondent is not completely satisfied with his/her health (46.2%) and nearly a quarter (23.5%) of the respondents are not satisfied with his/her health. Initially, in the questionnaire, there was an additional value indicating that the respondent cannot answer this question. No respondent has chosen this option.

Respondent's smoking habits (e4RespSmoking): this variable indicates if the respondent smokes and how intensively. Categorical, nominal, numeric variable which is based on question e4 of the questionnaire. This variable has 5 values: 0 means that the respondent has never smoked; 1 means that (s)he smokes regularly; 2 means that (s)he smokes sometimes and 3 means that (s)he used to smoke but gave up. Initially in the questionnaire, there was a value for not giving an answer. All respondents gave an answer. A little more than half of the respondents does not smoke (51.3%), but the majority of the smokers are regular smokers (86.9% of the smokers, i.e., 42.3% of all households).

Respondent's alcohol consumption (e6RespAlcohol): this variable indicates whether the respondent consumes alcohol and if yes, how regularly. Categorical, ordinal, numeric variable, which is based on question e6 of the questionnaire. The variable can take the following values: 0=does not drink alcohol; 1=daily; 2=more than once a week; 3=once a week; 4=monthly; 5=sometimes. There was one respondent who did not know. Given that the impact of this one respondent is not significant, we decided to keep this observation; we assigned a value of 5 to observation 401. More than 53% of the respondents do not consume alcohol. The regular drinkers are less than one-tenth of all respondents.

Household member's work incapacity (e6WorkIncapacityHH): this variable indicates if there is any member of the household, whose health restricts work possibilities. Categorical, nominal, numeric variable based on question e6 of the questionnaire. The variable can take the following values: 1=the respondent; 2 =another household member; 3=both; 0=none. In around a quarter (24.1%) of the household, there is at least one person, whose health restricts working.

Respondent's satisfaction with life (e8RespSatisfactionLife): this variable indicates the respondent's satisfaction with his/her life based on his/her judgement. Categorical, ordinal, numeric variable based on question e7 of the questionnaire. The variable can take the following values: 1=not at all satisfied; 2=rather not; 3=so-so; 4=rather yes; 5=completely. Although in the questionnaire there was a possibility to answer "I do not know", each respondent valued his/her satisfaction. Around one third (32.9%) of the respondents has answered so-so. Interesting to see that those of are completely dissatisfied are fewer (4.8% of all respondents) than those being completely satisfied (12.5%).

Respondent's satisfaction with future prospects (e8RespSatisfactionFuture): this variable indicates the respondent's satisfaction with his/her life based on his/her own judgement. Categorical, ordinal, numeric variable based on question e7 of the questionnaire. The variable can take the following values: 1=not at all satisfied; 2=rather not; 3=so-so; 4=rather yes; 5=completely. Although in the questionnaire there was a possibility to answer "I do not know", each respondent valued his/her satisfaction. Around one third (40.7%) of the respondents has answered so-so. Interesting to see that those of are completely dissatisfied are fewer (6.2% of all respondents) than those being completely satisfied (9.7%).

Respondent's satisfaction with the household's financial situation (e8RespSatisfactionFinance): this variable indicates the respondent's satisfaction of his/her life based on his/her own judgement. Categorical, ordinal, numeric variable based on question e7 of the questionnaire. The variable can take the following values: 1=not at all satisfied; 2=rather not; 3=so-so; 4=rather yes; 5=completely. Although in the questionnaire there was a possibility to answer "I do not know", each respondent valued his/her satisfaction. Around one third (34.1%) of the respondents has answered so-so. It should be noted that those of are completely dissatisfied are significantly more (17.5% of all respondents) than those being completely satisfied (3.6%).

Frequency of feeling stressed (e8RespFrequencyStressNeg): this variable indicates how often in the last two weeks the respondent felt nervous, disturbed or stressed. Categorical, ordinal, numeric variable which was based on question e8 of the questionnaire. The values of this variable can be 1=not at all; 2=one or two days; 3=more than half of the days; 4=nearly every day; 0=does not know. Nearly one quarter (23.2%) of the respondents is constantly stressed and only 16.1% are not stressed at all.

Frequency of feeling satisfied, well-balanced (e8RespFrequencySatisfiedPos): this variable indicates how often in the last two weeks the respondent felt satisfied and well balanced. Categorical, ordinal, numeric variable which was based on question e8 of the questionnaire. It should be noted that the initial question asked how many times this disturbed the respondent. However, based on the answers given by the respondents, we assume they understood the question as to how many times this feeling happened to them in the last two weeks. Logically, it would make sense that feeling happy does never bother anybody, hence if the question was understood literally, all values for this variable would

be 1. The values of this variable can be 1=not at all; 2=one or two days; 3=more than half of the days; 4=nearly every day; 0=does not know. More than half (53.2%) of the respondents do not feel satisfied most of the time.

Frequency of feeling that nothing can give fun (e8RespFrequencyNoFunNeg): this variable indicates how often in the last two weeks the respondent found no fun in any activity. Categorical, ordinal, numeric variable which was based on question e8 of the questionnaire. The values of this variable can be 1=not at all; 2=one or two days; 3=more than half of the days; 4=nearly every day; 0=does not know. The majority (67%) of the respondents felt that there is not much positive in activities less than 1-2 days.

Frequency of feeling hopeless (e8RespFrequencyHopelessNeg): this variable indicates how often in the last two weeks the respondent felt hopeless. Categorical, ordinal, numeric variable which was based on question e8 of the questionnaire. The values of this variable can be 1=not at all; 2=one or two days; 3=more than half of the days; 4=nearly every day; 0=does not know. The majority (70.2%) of the respondents felt hopeless less than 1-2 days, but more than a quarter felt hopeless (28%).

Frequency of feeling in a good mood, energetic (e8RespFrequencyEnergeticPos): this variable indicates how often in the last two weeks the respondent felt in a good mood and energetic. Categorical, ordinal, numeric variable which was based on question e8 of the questionnaire. It should be noted that the initial question asked how many times this disturbed the respondent. However, based on the answers given by the respondents, we assume they understood the question as to how many times this feeling happened to them in the last two weeks. Logically, it would make sense that feeling happy does never bother anybody, hence if the question was understood literally, all values for this variable would be 1. The values of this variable can be 1=not at all; 2=one or two days; 3=more than half of the days; 4=nearly every day; 0=does not know. 14.3% of the respondents did not feel in a good mood at all.

Frequency of feeling tired and having lack of energy (e8RespFrequencyTiredNeg): this variable indicates how often in the last two weeks the respondent felt tired and/or had a lack of energy. Categorical, ordinal, numeric variable which was based on question e8 of the questionnaire. The values of this variable can be 1=not at all; 2=one or two days; 3=more than half of the days; 4=nearly every day; 0=does not know. More than half (50.6%) of the respondents felt tired most of the time in the last two weeks.

Frequency of feeling happy (e8RespFrequencyHappyPos): this variable indicates how often in the last two weeks the respondent felt happy. Categorical, ordinal, numeric variable which was based on question e8 of the questionnaire. It should be noted that the initial question asked how many times this disturbed the respondent. However, based on the answers given by the respondents, we assume they understood the question as to how many times this feeling happened to them in the last two weeks. Logically, it would make sense that feeling happy does never bother anybody, hence if the question was understood literally, all values for this variable would be 1. The values of this variable can be 1=not at all; 2=one or two days; 3=more than half of the days; 4=nearly every day; 0=does not know. 12.9% of the respondents did not feel happy at all, 44.6% of all respondents felt mostly unhappy.

How often the respondent socializes (t3RespSocial): this variable indicates how often the respondents goes out to social programs. Categorical, ordinal, numeric variable which was developed based on question t3 of the questionnaire. There are the following values

of this variable: 1=more than once a week; 2=once a week; 3=more than once a month; 4=once a month; 5=more than once a year; 6=once a year; 7=less than once a year; 8=never. Nobody has chosen the “do not know” value in the initial raw data, therefore we left out that value from this variable. 34.1% of the respondents never goes out. More than half (50.4%) of the respondents have social programs more than once a year but characteristically they socialize less than monthly.

Negative stigma (i1StigmaPriority1); (i1StigmaPriority2); (i1StigmaPriority3); (i1StigmaPriority4); (i1StigmaPriority5): these variables indicate that according to the respondent, what is the number one/two/three/four/five stigma factor in the society. Categorical, nominal, numeric variables are based on question i1 of the questionnaire. The value of the variables varies between 1 and 15 each number indicating a different stigma factor:

- shouting in public
- 2: not paying the bank loan
- 3: unattended garden
- 4: throw rubbish away
- 5: children do not go to school
- 6: taking drugs
- 7: going to pubs (alcohol)
- 8: not paying personal debt
- 9: non-registered job (not legal)
- 10: stealing wood
- 11: not attending social work
- 12: cheating on a partner
- 13: not paying utilities
- 14: smoking
- 15: not paying taxes

The most significant stigma factor according to the majority is taking drugs. 30% of the respondents put that factor in the number one place. Smoking is considered to be the least stigmatizing factor in society, with 6.2% of the respondents mentioning it under any of the five priorities.

Table 8: Frequencies of negative stigma behaviour

Frequencies (number of observation), N=504							
ID	Priority	I	II	III	IV	V	Score
6	taking drugs	152	72	41	33	27	84,27
1	shouting in public	98	59	67	57	60	73,40
4	throwing rubbish on street	41	74	57	51	52	55,07
5	kid is not in school	46	51	72	61	53	55,00
7	going to pubs	22	62	35	33	32	37,40
12	cheating on partner	46	33	33	28	27	36,27
3	not taking care of the garden	19	38	47	49	42	35,20
10	stealing wood	32	28	40	43	46	34,93
8	not paying their personal debt	28	29	31	31	41	30,13
11	not attending social work	7	17	21	35	36	18,13
13	not paying utilities	9	12	17	31	24	15,33
2	not paying their bank loan	0	17	20	12	2	10,27
15	not paying taxes	2	7	7	23	36	9,40
9	illegal/black job	1	4	9	7	14	5,07
14	smoking	1	1	7	10	12	4,13

Source: own analysis based on the questionnaire.

Relationship indicator (s1Relationship): these variables what the relationship of the individual is with the respondent. Categorical, nominal, numeric variable which was developed based on question s1 of the questionnaire. There are the following values of this variable: 1=the respondent; 2=spouse; 3=partner; 4=own child; 5=child of the spouse/partner; 6=adoptee; 7=grandchild; 8=parent; 9=grandparent; 10=other relative; 11=not relative. Most of the individuals listed are the own child of the respondents. 6 individuals could not be identified as no data was available from the questionnaire. For individual 114 from household 30, we assigned the value of 4, based on the age and the most expected (modus) outcome, we assume that this person is the child of the respondent as well. For individuals 795 and 796 from household 246, we assigned the value of 2 and 4 assuming that individual 795 is the spouse of 794 and 796 is the son of 795 based on the age/gender of the respondent and the individuals in question and the most expected outcome (modus). For individuals 1200 and 1201 from household 351, we assigned the values of 4 assuming that these two individuals are the daughters of the respondent of this household based on the age, gender and education of the individuals in question as well as the expected outcome (modus). Individual 1182 from household 343 has been assigned the value of 2 assuming that the individual in question is the spouse of the respondent based on the age and gender of the individual and the expected outcome (modus).

Gender of individuals (s1GenderIND): this variable is indicating the gender of the individual. Categorical, nominal, numeric variable with two possible values: 1=male; 2=female. Looking at the gender of the individuals the sample is well balanced: 50.5% of the individuals are male, 49.5% are female. After the first consistency check, there are still 18 values are missing.

Age of individuals (s1.3AgeIND): indicates the age of the individuals. Scale variable which has been calculated based on question s1 sub-question 3 of the questionnaire from the year of birth. The youngest individuals are 0 the oldest is 91 years old. The average age of respondents is just a little over 31 years old. in their forties (median is 29 and mode

is 1). Standard deviation is 19.83, Skewness is 0.256 and kurtosis is -0.929. No outliers are identified.

Individuals' education (sx.4EduIND): this variable indicates the individuals' education level. Categorical, nominal, numeric variable which is based on question sx.4 of the questionnaire and the related string variable. The variable has 9 values indicating with the following meaning: 1= less than 8 primary school class; 2= 8 years of primary school; 3=secondary school providing profession; 4=A-levels; 5=college degree; 6=currently studying in primary school; 7=currently studying in secondary school; 8=currently in preschool; 9=not yet in pre-school. Individual 221 from household 66 was missing this variable value. Based on age (1) we assumed that the value for education is 9. More than half (54.8%) of the individuals have lower education than secondary school. If we look at only those individuals who are in active age, i.e., who are at least 18 years old but not older than 65, 45.2% has a lower education than secondary school. For the sake of consistency, we also checked the dataset filtered for legal age grown-ups, i.e., for individuals who are at least 18 years old and which has the same outcome as looking at active age. In the latter case, we are looking at 1216 cases.

Economic activity variables (m1EActiveIND_1; m1EActiveIND_2). These variables are indicating if and in what type of economic activity the individual is engaged. One person may have more than one economic activity, same or different types (for example s/he can have two jobs). These variables are based on question m of the questionnaire. Categorical, nominal, numerical variable. The values of these variables were defined as follows: 1=8 hour registered job; 2=registered temporary job; 3=other; 4=maternity payment; 5=communal work; 6=work abroad; 7=registered unemployment; 8=unregistered temporary job; 9=unregistered inactive; household; 10=retired; 11=registered part-time job; 12=studying. We also have an additional variable that indicates any other activities that could be related to the employment status. This variable is a categorical, string variable. (m1EActiveIND_other). These variables are describing the economic activities of legal age grown-ups. Cases, where the individual is below 18 years have been filtered out. After the filtering, there are 1248 legal age grown-ups, out of which 481 have registered jobs and 454 have an 8-hour legal job. The modus of the three variables are respectively 1, 4 and 1 indicating that the biggest proportion of the cases has an 8-hour job as a first economic activity and/or registered temporary job as a second economic activity and that most of the people who are having another type of activity is caretaking. 31 individuals have no economic activity at all. 76 has a second economic activity.

8-hour job (Tm18hourjobIND): we created a categorical, nominal, numeric variable from the economic activity variables, which are indicating if the individual in question has an 8-hour registered job (with value 1) or not (value 2) regardless of whether it is first or second economic activity. 454 individuals have registered for 8-hour job.

Registered job (Tm1RegIND): we created a categorical, nominal, numeric variable from the economic activity variables, which are indicating if the individual in question has a registered job (with value 1) or not (value 2) regardless of whether it is first or second economic activity. This includes economic activities such as full-time or part-time registered jobs or registered temporary jobs. 481 individuals have any type of registered job (including full-time or part-time).

Individual has a bank account (m2BankAccountIND): This variable indicates if the individual has a bank account (with value 1) or not (with value 2). Categorical, nominal numeric variable. This variable is based on question m2 of the questionnaire. We assume

that individuals below the legal age cannot have a bank account, hence we assigned a value of 2 to these cases. After filtering on the age, we identified 39 cases where no value was indicated based on the questionnaire. 44.6% of the individuals has no bank account.

Individual incomes from last month (m3NetIncomeLastMonthIND_1 and m3NetIncomeLastMonthIND_2): these variables indicate the individual's net incomes – if any - from the previous month expressed in thousand HUF, including the pension, caretaker's income, unemployment benefit, maternity benefit but excludes the family subsidies and subsidies for people in employment age). We filter the data based on the age of the individuals and exclude cases where the individual has not reached the legal age yet (this follows the logic that underaged persons do not have a legal job and hence no legal income either). These variables show that respondents indicated in some cases more than one income source. This includes cases where the individual has more than one income-generating economic activity based on variables m1EActiveIND_1; m1EActiveIND_2, but also indicates cases where there is only one economic activity indicated but additional – in most cases small – income was registered. Many cases are indicated as missing. For the ease of calculations, we created twin variables (jov10 and jov20) where these cases are assigned a value of 0, otherwise in transformed variables these cases are excluded from the dataset.

To keep consistency in the dataset and to facilitate our calculations, we created an additional variable as per below.

Individual total income from last month (m3NetIncomeLastMonthIND_TOTAL): transformed variable calculated as the sum of variables m3NetIncomeLastMonthIND_1 and m3NetIncomeLastMonthIND_2. Scale variable which has been quantified based on question m3 of the questionnaire. The minimum is 0 and the maximum is 700 thousand HUF. The households' average last month net income is 90.1 thousand HUF with a standard deviation of 2.237 thousand HUF. Median is 77 thousand. Skewness is 2.078 and kurtosis 9.560. There are a significant number of outliers, which should be further explored as different clusters within the variable. Therefore, looking at outliers under this variable will only be meaningful if we filter the data further.

Form of payment (m4FormPaymentIND_1; m4FormPaymentIND_2 and m4FormPaymentIND): these variables indicate in what form the individual receives different incomes. Categorical, nominal, numerical variables with values of 1=received on the bank account; 2=received in cash; 3=received both on a bank account and in cash. Under variable m4FormPaymentIND_2 there are 34 cases (1.8% of all cases) which are indicating any method of payment. There are cases where no income was received at all still the method of payment is indicated indicating that there is income in certain periods. Also, there are cases where income is indicated but the method of payment for the second income is missing. In this case, we refer the case to the first income and its payment method. Interestingly, there are cases where the individual is indicating that there is income received on a bank account, but the individual indicated that there is no bank account. In this case, it can be assumed that someone in the household has a bank account. We created a variable based on these variables called m4FormPaymentIND indicating for all received income if the individual is receiving the amount son a bank account (value=1), in cash (value=2) or in both formats (value=3). If the income formats were different, we assigned a value of 3 for this variable. Out of the 1248 legal age individuals, 177 (14.2%) has not indicated any format of payment. This partly falls in line with individuals who have no economic activity and/or income. More than half (52.9%) of those who indicated a payment format, is receiving income from a bank account.

Individual has one or more loans (m5LoanINDtyp_1; m5LoanINDtyp_2; m5LoanINDtyp_3): these variables show if and what type of loan(s) the individual in question has. Categorical, nominal, numeric variable with values 1=commercial credit; 2=mortgage loan on property; 3=car loan; 4=personal credit; 5=other bank loan. One individual can have more than one loan. In the dataset, there was no case where the individual had more than three running loans. Based on these variables we also created a new variable (m5LoanIND) which indicates if the individual has a loan with values 1=if yes and 0= if no. This variable is categorical, nominal, numeric variable which is based on question m5 of the questionnaire. The variable was defined by looking at what type if any, of loan each household member has (consumer loan, mortgage loan, car loan, personal loan or any other bank loan). Looking at the variable m6InstalmentsMonthlyIND, there are two types of inconsistencies in the data:

1. where it was indicated that there is no loan or data was missing, but the monthly instalment value is given.
2. where it was indicated that there is a loan, but there is a missing value for monthly instalments (557 cases);

12.6% of the legal age individuals did not indicate if they have any loans or not. We 68.4% of those who have indicated (746 individuals) have a loan. Based on the modus of the variables the most common loan type is a mortgage loan on, consumer loan and other bank loans. After the consistency check, only 4.6% of the individuals have no data on this variable and the those who have indicated, 72.3% have a loan (849 individuals).

Amount of monthly loan instalments in thousand HUF (m6InstalmentMonthIND): this variable indicates the amount of the monthly instalments the individual is paying in thousand HUF. Scale variable calculated based on m6 of the questionnaire.

We need to highlight here, that the questionnaire gives one answer to two different questions asked:

1. How much is the monthly loan instalment of the given household member?
2. How much the given household member is paying monthly for loan instalments?

Considering the fact that we are running an analysis on the consequences of non-performing loans, we assume that the answer to these questions can be two separate answers in case the household is not able/willing to pay (a part) of the instalments. In this regard, this variable need to be controlled together with g8 and g9 questions in the case of households where there are non-performing loans. In the case of households, where non-performing loans are not disturbing the household's financial liquidity, we assume that the household is paying the amount they "should" contractually pay.

The monthly instalments vary between 0 and 160 thousand HUF. Most legal age individuals pay instalments (mode is 10 thousand HUF and the median is 20 thousand HUF). An individual on average is paying 26.9 thousand HUF for instalments. Standard deviation is 21.4 thousand HUF, which is high based on the CV. Skewness is 1.951 and kurtosis is 6.045 There is an indication of several outliers (cases indicating the individual's id and (household id): 452 (148), 500 (159), 963 (285), 52(12), 977 (288) 462 (150) 453(148) 1245(363), 281(88), 247(76), 148(248)) . One outlier is extreme 452 (159).

Individual's non-performing borrowing types (m7NPBtypeIND_1 and m7NPBtypeIND_2): these variables indicate what type of non-performing borrowing the individual has, if any. One individual can have more than one non-performing borrowing.

These variables are based on m7 of the questionnaire. Question m7 gives a score to the individuals listed in the household and are older than 18 to indicate the type of the underlying obligation that turned into non-performing. Categorical, nominal, numeric variable. 1-5 indicates if the non-performing obligation is based on some type of borrowing from a financial institution (these collectively we name them non-performing loans). 6-7 are nonperforming obligations that should have been paid as tax or after usage of the water system, gas, electricity, or rent (these collectively we name them public obligations). 8 and 9 represent payment obligations based on micro agreements (consumption borrowing, etc); (these we call micro-obligations). It should be noted that the respondents had a possibility to answer as “other loan” which they had to specify in a separate variable. Most of these “other loans” could have been classified into m7NPBtypeIND_1 and m7NPBtypeIND_2 variables. We changed case 1228 from household 358 value under m7NPBtypeIND_1 from 9 to 5, as the “other loan” was specified as a loan from a credit card. We, hence, categorize it under other bank loans. 180 individuals indicated that they have nonperforming borrowing, 22 individuals indicated that they have more than one non-performing borrowing. The most common non-performing financial obligation is non paid utility bills followed by consumer credit and mortgage loans.

Based on variables m7NPBtypeIND_1 and m7NPBtypeIND_2, we created four new variables, as per below.

Individual has any type of non-performing financial obligation (m7NPBIND): this variable indicates if the individual in question has any type of non-performing financial obligation or is not defined as any financial borrowing which is overdue by more than 90 days. Categorical, nominal, numeric variable with a value 1 (if yes) and 0 (if no or unknown). 180 individuals (14.4% of all legal age individuals) have any type of non-performing financial obligation.

Individual has a non-performing loan (m7NPLIND): this variable indicates if the individual in question has any type of non-performing loan. Categorical, nominal, numeric variable. The values of this variable can be 1 if the person has a non-performing loan, and 0 if she does not. Non-performing loans are defined as any financial obligation towards financial institutions (types 1-5) which are overdue for more than 90 days. 108 individuals (8.7% of all legal age individuals) have any type of non-performing financial obligation towards financial institutions.

Individual has a non-performing public financial obligation (m7NPPLIND): this variable indicates if the individual in question has any type of non-performing public financial obligation defined as utility type financial obligation and tax type financial obligation, type 6 and 7 which are overdue more than 90 days. Categorical, nominal, numeric variable. The values of this variable can be 1 if the person has a non-performing public loan, and 0 if she does not. 72 individuals (5.8% of all legal age individuals) have any type of non-performing financial obligation towards public bodies and utility providers.

Individual has non-performing financial micro-obligation (m7NPMLIND): this variable indicates if the individual in question has any type of non-performing micro-obligation defined as borrowings from natural persons (e.g. credit in local grocery), type 8 which are overdue more than 90 days. Categorical, nominal, numeric variable. The values of this variable can be 1 if the person has a non-performing microloan, and 0 if she does not. 2 individuals (0.2% of all legal age individuals) have any type of non-performing financial obligation towards natural persons.

Total sum of non-performing borrowings for the individuals (m8SumNPBIND): this variable indicates the sum of the value of all non-performing loans and borrowings of the individual in question in thousand HUF. Scale variable, which has been calculated based on m8 of the questionnaire by summing up the value of all borrowings which are due for more than 90 days for legal age individuals. The value of the total NPLs varies between 0 and 16 million HUF. The average value of the individual NPBs is 775.45 thousand HUF if we are looking at the households who have indicated an amount for non-performing borrowings. For all individuals, the average non-performing amount is 103.77 thousand HUF. Most individuals have no NPLs (mode and median are 0) if we look at the full sample of legal age individuals. Skewness and kurtosis are 13.651 and 218.308 respectively. If we are looking at the sample in which individuals indicated any amount for NPBs, the minimum amount is 6 thousand HUF, the median is 180 thousand HUF, skewness 4.967 and kurtosis 27.984. Standard deviation is 2065.073 thousand HUF. There are a significant number of outliers, with extreme values. The most extreme value of 67 million HUF for consumer credit and car loan seems unrealistic. We assume that there was a typo mistake in the data and changed the value for this observation (individual 922 in household 278) to 6700 thousand HUF. The rest of the indicated outliers we have not treated, as based on the type of non-performing loan, the amount seems realistic. The significant distance between groups of individuals is well suggested by these parameters.

There are some inconsistencies within the dataset:

1. the individual indicated under variable m8SumNPBIND that there is a certain amount of nonperforming financial obligation but has not indicated any non-performing loan types. In this case, we changed the value of 0 under variable m7NPBIND to 1 for cases 809 in household 251 and 50 for household 11.
2. The individual indicated that there is non-performing financial obligation but has not indicated any amount (the following 15 cases (household): 5 (3), 21 (6), 27 (7), 28 (7), 58 (15), 59 (16), 138 (38), 265 (83), 867 (266), 868 (267), 1054 (305), 1257 (366), 1383 (417), 1387 (418), 1410 (425)). To these cases, an average or minimum sum could be assigned (based on the type of non-performing loan we grouped the dataset and looked at the amount of non-performing loans by type of the non-performing loan. We, hence, assigned the following values to the cases in question. It should be noted that looking at the other responses of the individuals in questions, it was more coherent to use the group minimums. To the last case we have not assigned any value, as the type of the loan is not known, hence no group minimum/mean could have been assigned.

Table 9: Values assigned to observations missing values

IDIND	IDHH	NPL type 1	Group mean by NPL type	Group min by NPL type
5	3	1	320	40
21	6	6	148,92	6
27	7	6	148,92	6
28	7	6	148,92	6
58	15	2	3780,91	400
59	16	6	148,92	6
138	38	1	320	40
265	83	3	2512,5	150
867	266	4	431,44	22
868	267	6	148,92	6
1054	305	9	?	?
1257	366	4	431,44	22
1383	417	2	3780,91	400
1387	418	7	99,83	13
1410	425	6	148,92	6

Source: own analysis.

After assigning the new values – given that we have chosen for the group minimums – we ran the analysis once more, as the descriptive parameters are expected to slightly change. The average amount of non-performing financial obligation between all legal age individuals is 104.75 thousand HUF with a standard error of 22.62. Standard deviation is 798.773, skewness 13.369 and kurtosis 218.007. For the subset of individuals who indicated that they have non-performing borrowing, the mean is 721.67, standard deviation 1992.223, skewness 5.175 and kurtosis 30.472.

Individuals' highest education (sx.4HighEduIND): this variable indicates the individuals' highest education. Categorical, nominal, numeric variable which is based on question sx.4 of the questionnaire and the related string variable. The variable has 6 values indicating with the following meaning: 1= less than 8 primary school class; 2= 8 years of primary school; 3=secondary school providing profession; 4=A-levels; 5=college degree; 6=currently studying in high school. To develop the data for this variable we processed the raw data. Data on individual household members' education levels is available. The respondent's education level needed transformation from string to numeric data. For this, we used the Microsoft Excel IF function. We included the "currently studying in high school" values under value 2=8 years of primary school. It should be noted that there is a motivation factor in this variable: studying as a grown-up may indicate a positive attitude towards improving the individual's financial situation. Besides, it is also unknown what the purpose of the secondary school study is; whether it is to get a higher degree than 8 years of primary school including profession and/or A levels or getting A-levels). In fact, these people surely have 8 primary schools finished. Given that there is only two observations representing only 0.4% of the full sample in this category, not taking these impacts into account will not significantly bias our analysis. Most (37.7%) of the respondents have 8 years of primary school education. 29.8% has secondary school education with a profession and another 19.6% of the respondents have finished their A-levels.

Current LTV (h3h5LTVcurrentIND): defined as the mortgage on the property divided by the actual market value of the property. Scale variable, which has been calculated from variables h2h3MortgageHH and h5RESPValueProperty. This is household-level data that was extended to the individuals. 174 individuals indicated values that could have been used. The minimum LTV is 5% the maximum 700% between those individuals who indicated values for both input variables. The average LTV is 86.67%, but around half of the individuals is facing higher than 50% LTV. Standard deviation of this variable is 1.07, skewness is 4.03 and kurtosis is 22.287.

We also created an ordinal, nominal, numeric variable (h3h4LTVRangeIND) indicating LTV ranges between 0-70% (with a value 1); between 70-130% (value 2) and above 130% value 3.

This variable shows that 65.5% of the individuals have an LTV lower than 70%, and 22.4% has higher than 130% LTV.

Willingness to pay index of the individuals (g8g9WillingnessIndexIND): the ratio indicating how big proportion the household could pay in the long run on a monthly basis compared to the monthly instalments that should be paid.

The minimum value is 0% and the maximum that the individual is willing to pay is 143% of the instalments that should be paid. The average proportion of willingly paid instalments compared to the instalments that should be paid is 15.7% but the majority cannot pay. Standard deviation of this variable is 24.5%, skewness is 2.136 and kurtosis is 5.402.

ANNEX 2 – Database: list of settlements and counties

Settlements (with the number of respondents)

Lácacséke (5), Nagyrozvágy (5), Felsőberekci (5), Alsóberekci (6), Pácin (13), Vajdácska (11), Bodrogolaszi (10), Rakacaszend (5), Perkupa (7), Rakaca (6), Bekecs (5), Taktakenéz (10), Prügy (10), Járdánháza (10), Andó (6), Sajókaza (12), Nagybarca (10), Sajószöged (10), Hejőkeresztúr (10), Muhi (7), Hernádkak (9), Taktabáj (8), Tiszaladány (9), Halmaj (6), Homrogd (6), Rásonysápberencs (7), Taktaharkány (13), Halmaj (1), Taktaszada (13), Ládbesenyő (8), Szendrőlád (7), Ormosbánya (10), Múcsony (9), Csernely (7), Farkaslyuk (7), Bócs (14), Ónod (15), Sajólád (9), Sajópetri (11), Jákfalva (10), Kelemér (6), Ragály (7), Parasznya (9), Radostyán (6), Mezőnyárád (11), Sály (10), Bogács (10), Tibolddaróc (10), Ároktő (7), Tiszakeszi (8), Mályi (15), Vilmány (8), Pere (8), Abaújkér (8), Szalaszend (8), Hernádnémeti (14), Fáj (8), Forró (9)

Counties:

54: Cigándi

55: Edelényi

56: Encsi

57: Gönci

58: Kazincbarcikai

59: Mezőcsáti

60: Mezőkövesdi

61: Miskolci

62: Ózdi

63: Putnoki

64: Sárospataki

65: Sátoraljaújhelyi

66: Szerencsi

67: Szikszói

68: Tiszaújvárosi

69: Tokaji

ANNEX 3 – Variables used in the empirical analysis

Table 10: Variables used in the empirical analysis

Variable	Description
0 Overdue debts	The value is 1 if the individual has any formal overdue debts (loan, utility bills, tax), otherwise 0, for each active age member of the household.
1 Full-time job	The value is 1 if the individual has a full-time registered job (public work excluded), otherwise 0, for each active age member of the household.
2 Registered work	The value is 1 if the individual has a full or part-time registered job, otherwise 0, for each active age member of the household.
3 Gender	0 if male, 1 if female, for each member of the household.
4 Age	Calculated based on the year of birth, in years, for each member of the household.
5 Education	Category variable indicating five categories: less than 8 classes of elementary school, elementary school, vocational exam, high school diploma, university degree. For each member of the household.
6 Net income	Net amount in thousand HUF received last month from employment (including pension, caretaking support, unemployment benefit, child-support, maternity, etc.). For each active age member of the household.
7 Bank account	If the individual has a bank account, the value is 1, otherwise 0.
8 Loan instalment	Instalment (in thousand HUF) of the individual's bank loan(s), for each active age member of the household.
9 Household members	Number of household members living under the same postal address (weight is 1 if, above 18 years, 0.5 if below 18 years of age).
10 Children	Number of children (below the age of 18) living in the same household (i.e., under the same postal address) (weight is 1 for all children).
11 Income per capita	Sum of net incomes of all household members divided by the weighted number of household members.
12 Forex loan	If somebody in the household had (ever) a foreign exchange denominated loan, the value is 1, otherwise 0.
13 Ability-to-pay ratio	The sum of net monthly incomes of the household is divided by the monthly expenses.
14 Perceived social aversion to overdue debts	Perceived social aversion to the non-payment of utility bills, loans, tax according to the respondent (higher value, greater aversion).

15	Perceived social aversion to shadow work	Perceived social aversion to unregistered work according to the respondent (higher value, greater aversion).
16	Settlement development	Settlement development indicator based on societal, demographic, living conditions, local economic, employment-related, infrastructural, and environmental factors)
17	Chronic illness	The value is 1 if there is someone in the household, whose health condition prevents employment, otherwise 0.
18	Smoking	If the individual is smoking regularly, the value is 1, otherwise 0.
19	Alcohol	If the respondent consumes alcohol more than once a week, the value is 1, otherwise 0.
20	Medication	If there is anyone in the family who permanently needs medication, the value is 1, otherwise 0.
21	Stressed	If the respondent was stressed for more than half of the days in the last two weeks, the value is 1, otherwise 0.
22	Hopeless	If the respondent was hopeless for more than half of the days in the last two weeks, the value is 1, otherwise 0.
23	Tired	If the respondent was tired more than half of the days in the last two weeks, the value is 1, otherwise 0.
24	Unhappy	If the respondent was unhappy more than half of the days in the last two weeks, the value is 1, otherwise 0.
25	Not socializing	The value is 1 if the individual goes out (religious, cultural, sport, recreational purposes) less than once a year, 0 otherwise.
26	Satisfied with health	The value is 1, if the individual is totally or rather satisfied with her/his health, otherwise 0.

ANNEX 4 - Overdue debt and employment model specifications

Table 11: Overdue debt and employment model specifications 1

		Y= Registered job N=1183 Modified R ² =0,245			Y=Full-time job N=1183 Modified R ² =0,250		
		Beta	t	p	Beta	t	p
C	Intercept	-0,86	-6,62	***0,000	-0,86	-6,70	***0,000
X	Overdue debt	-0,23	-6,14	***0,000	-0,22	-6,08	***0,000
Z1	Gender	-0,14	-5,63	***0,000	-0,14	-5,46	***0,000
Z2	Age	0,05	8,34	***0,000	0,05	8,45	***0,000
Z2	Age ²	-0,00	-7,92	***0,000	-0,00	-8,08	***0,000
Z3	Education: 8 primary school	0,13	2,47	**0,014	0,10	1,94	**0,052
Z3	Education: profession	0,37	6,81	***0,000	0,35	6,54	***0,000
Z3	Education: A-levels	0,42	7,17	***0,000	0,40	6,86	***0,000
Z3	Education: degree	0,54	6,89	***0,000	0,53	6,97	***0,000
Z4	Settlement development	0,00	2,65	***0,008	0,00	2,77	***0,006
Z5	Ability to pay						
Z6	Ill in household						

Source: Questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Note: This table introduces further model specifications to the models discussed under chapter 4.6.1. The model is based on OLS regression. C is the intercept, X is the main explanatory variable and Z_i are the control variable. The absolute values of the indicated modified R² are less important here, as the purpose of this model is to analyze the causality and not to use it for predictions. Results are similar when calculating robust standard errors. If the coefficient is significant at 1%, 5%, 10% significance level, we mark the p values with ***, **, or * respectively. We developed the same structure models with binary logarithmic and probit models. Results suggest the same conclusions.

Table 12: Overdue debt and employment model specifications 2

		Y= Registered job N=1131 modified R ² =0,269			Y=Full-time job N=1183 Modified R ² =0,272		
		Beta	t	p	Beta	t	p
C	Intercept	-0,45	-3,02	***0,003	-0,44	-2,97	0,003
X	Overdue debt	-0,22	-5,79	***0,000	-0,20	-5,20	***0,000
Z1	Gender	-0,16	-6,11	***0,000	-0,15	-5,84	***0,000
Z2	Age	0,05	7,45	***0,000	0,05	7,52	***0,000
Z2	Age ²	0,00	-7,16	***0,000	0,00	-7,27	***0,000
Z3	Education: 8 primary school	0,14	2,68	***0,007	0,12	2,23	**0,026
Z3	Education: profession	0,33	5,90	***0,000	0,31	5,62	***0,000
Z3	Education: A-levels	0,40	6,70	***0,000	0,38	6,50	***0,000
Z3	Education: degree	0,53	6,71	***0,000	0,53	6,79	***0,000
Z4	Settlement development						
Z5	Ability to pay	-0,02	-0,58	0,561	-0,01	-0,21	0,836
Z6	Ill in household	-0,07	-2,39	**0,017	-0,09	-2,79	***0,005
Z7	County district 54	-0,22	-2,44	**0,015	-0,30	-3,41	***0,001
Z7	County district 55	-0,20	-2,47	**0,014	-0,22	-2,68	***0,007
Z7	County district 56	-0,32	-3,70	***0,000	-0,36	-4,26	***0,000
Z7	County district 57	-0,36	-4,08	***0,000	-0,36	-4,15	***0,000
Z7	County district 58	-0,24	-3,00	***0,003	-0,26	-3,21	***0,001
Z7	County district 59	-0,18	-1,85	*0,064	-0,21	-2,16	**0,031
Z7	County district 60	0,05	0,62	0,536	-0,02	-0,24	0,809
Z7	County district 61	-0,17	-2,35	**0,019	-0,20	-2,81	***0,005
Z7	County district 62	-0,31	-3,64	***0,000	-0,31	-3,68	***0,000
Z7	County district 63	-0,14	-1,51	0,130	-0,17	-1,85	*0,065
Z7	County district 64	-0,32	-3,56	***0,000	-0,35	-3,87	***0,000
Z7	County district 65	-0,38	-3,17	***0,002	-0,38	-3,23	***0,001
Z7	County district 66	-0,05	-0,69	0,494	-0,05	-0,65	0,515
Z7	County district 67	-0,12	-1,34	0,182	-0,13	-1,40	0,162
Z7	County district 68	-0,16	-1,77	*0,076	-0,16	-1,81	*0,07

Source: Questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Note: This table introduces further model specifications to the models discussed under chapter 4.6.1. The model is based on OLS regression. C is the intercept, X is the main explanatory variable and Z_i are the control variable. The absolute values of the indicated modified R² are less important here, as the purpose of this model is to analyse the causality and not to use it for predictions. The County District dummy variables serve to control county district level fixed effects. Results are similar when calculating robust standard errors, except for the County District dummy 68 which is not significant in this latter case even at a 10% significance level. If the coefficient is significant at 1%, 5%, 10% significance level, we mark the p values with ***, **, or * respectively. We developed the same structure models with binary logarithmic and probit models. Results suggest the same conclusions.

ANNEX 5 - Overdue debt and bank account model specifications

Table 13: Overdue debt and bank account model specifications

		Y=Bank account N=1153			Y=Bank account N=1153		
		modified R ² =0,290			modified R ² =0,199		
		Beta	t	p	Beta	t	p
C	Intercept	-0,13	-0,88	0,379	-0,44	-2,93	***0,004
X	Overdue debt	-0,05	-1,33	0,183	-0,12	-3,13	***0,002
Z1	Gender	0,09	3,50	***0,000	0,01	0,43	0,666
Z2	Age	0,00	0,65	0,516	0,02	3,42	***0,001
Z2	Age ²	0,00	-0,70	0,486	0,00	-3,22	***0,001
Z3	Education: 8 primary school	0,06	1,11	0,266	0,10	1,80	*0,071
Z3	Education: profession	0,18	3,28	***0,001	0,31	5,42	***0,000
Z3	Education: A-levels	0,29	4,87	***0,000	0,46	7,29	***0,000
Z3	Education: degree	0,32	3,95	***0,000	0,57	6,82	***0,000
Z4	Settlement development	0,01	4,20	***0,000	0,01	5,13	***0,000
Z5	Ability to pay	0,02	0,76	0,446	0,05	2,03	**0,042
Z6	Ill in household	-0,05	-1,60	0,109	-0,08	-2,39	**0,017
Z7	Net income	0,00	6,35	***0,000			
Z8	Registered job	0,22	7,02	***0,000			

Source: Questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Note: This table introduces further model specifications to the models discussed under chapter 4.6.2. The model is based on OLS regression. C is the intercept, X is the main explanatory variable and Zi are the control variable. The absolute values of the indicated modified R² are less important here, as the purpose of this model is to analyse the causality and not to use it for predictions. Results are similar when calculating robust standard errors. If the coefficient is significant at 1%, 5%, 10% significance level, we mark the p values with ***, **, or * respectively. We developed the same structure models with binary logarithmic and probit models. Results suggest the same conclusions.

ANNEX 6 - Overdue debt and health model specifications

Table 14: Overdue debt and health model specifications 1

		Y=Unhealthy index N=481 modified R ² =0,309			Y= Unhealthy index N=480 Modified R ² =0,317		
		Beta	t	p	Beta	t	p
C	Intercept	0,24	3,85	***0,000	0,18	0,71	0,479
X	Overdue debt (own)	0,19	1,73	*0,085	0,17	3,31	***0,001
Z1	Gender	0,07	0,64	0,523	0,07	1,49	0,136
Z2	Age	0,01	0,58	0,560	0,01	0,91	0,364
Z2	Age ²	0,00	-1,19	0,234	0,00	0,27	0,791
Z3	Education: 8 primary school	-0,09	-3,74	***0,000	-0,09	-1,16	0,245
Z3	Education: profession	-0,32	-3,57	***0,000	-0,31	-3,59	***0,000
Z3	Education: A-levels	-0,33	-4,77	***0,000	-0,31	-3,37	***0,001
Z3	Education: degree	-0,55	-1,35	0,177	-0,54	-4,51	***0,000
Z4	Settlement development	0,00	-2,74	***0,006	0,00	-1,18	0,240
Z5	Ability to pay	-0,10	-4,24	***0,000	-0,10	-2,74	***0,006
Z6	Net income				0,00	0,54	0,590
Z7	Registered job				-0,10	-1,92	*0,055
Z8	Forex loan				0,06	1,26	0,209

Source: Questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Note: This table introduces further model specifications to the models discussed under chapter 4.6.3. The model is based on OLS regression. C is the intercept, X is the main explanatory variable and Zi are the control variable. X variable indicates if the individual him/herself has overdue debt. The Z3 reference value is the education level less than 8 primary schools. The absolute values of the indicated modified R² is less important here, as the purpose of this model is to analyse the causality and not to use it for predictions. Results are similar when calculating robust standard errors. If the coefficient is significant at 1%, 5%, 10% significance level, we mark the p values with ***, **, or * respectively.

Table 15: Overdue debt and health model specifications 2

		Y= Unhealthy index N=480 Modified R ² =0,244			Y= Unhealthy index N=480 Modified R ² =0,255		
		Beta	t	p	Beta	t	p
C	Intercept	-0,27	-1,05	0,294	-0,23	-0,93	0,354
X	Overdue debt	0,20	3,80	***0,000	0,22	4,26	***0,000
Z1	Gender	0,08	1,84	*0,067	0,10	2,22	**0,027
Z2	Age	0,02	1,56	0,120	0,01	1,22	0,222
Z2	Age ²	0,00	-0,34	0,732	0,00	0,02	0,984
Z3	Education: 8 primary school	-0,10	-1,29	0,198	-0,10	-1,29	0,198
Z3	Education: profession	-0,26	-3,05	***0,002	-0,27	-3,14	***0,002
Z3	Education: A-levels	-0,28	-3,10	***0,002	-0,30	-3,31	***0,001
Z3	Education: degree	-0,50	-4,19	***0,000	-0,52	-4,57	***0,000
Z4	Settlement development						
Z5	Ability to pay	-0,10	-2,63	***0,009	-0,10	-2,58	**0,010
Z6	Net income	0,00	0,18	0,860			
Z7	Registered job	-0,09	-1,56	0,119			
Z8	Forex loan	0,04	0,75	0,456	0,03	0,57	0,567
Z9	County district 54	-0,02	-0,18	0,855	0,00	-0,01	0,990
Z9	County district 55	0,20	1,65	0,100	0,22	1,76	*0,079
Z9	County district 56	0,37	2,83	***0,005	0,40	3,09	***0,002
Z9	County district 57	0,32	2,45	**0,015	0,35	2,71	***0,007
Z9	County district 58	0,12	0,99	0,323	0,14	1,20	0,231
Z9	County district 59	0,28	1,97	**0,049	0,31	2,16	**0,031
Z9	County district 60	0,18	1,49	0,136	0,16	1,40	0,162
Z9	County district 61	0,21	1,96	*0,050	0,22	2,09	**0,037
Z9	County district 62	0,39	3,11	***0,002	0,42	3,37	***0,001
Z9	County district 63	0,18	1,32	0,188	0,18	1,33	0,184
Z9	County district 64	-0,12	-0,86	0,389	-0,08	-0,60	0,548
Z9	County district 65	0,18	1,16	0,246	0,22	1,44	0,152
Z9	County district 66	0,15	1,27	0,206	0,15	1,29	0,199
Z9	County district 67	0,29	2,22	**0,027	0,30	2,27	**0,024
Z9	County district 68	0,06	0,50	0,620	0,07	0,57	0,568

Source: Questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Note: This table introduces further model specifications to the models discussed under chapter 4.6.3. The model is based on OLS regression. C is the intercept, X is the main explanatory variable and Zi are the control variable. X variable indicates if the individual him/herself has overdue debt. The Z3 reference value is the education level less than 8 primary schools. The absolute values of the indicated modified R2 are less important here, as the purpose of this model is to analyse the causality and not to use it for predictions. The County District dummy variables serve to control county district level fixed effects. Results are similar when calculating robust standard errors, except for the County District dummy 68 which is not significant in this latter case even at a 10% significance level. If the coefficient is significant at 1%, 5%, 10% significance level, we mark the p values with ***, **, or * respectively.

Table 16: Overdue debt and health model specifications 3

		Y=Unhealthy index		
		N=481	modified R ² =0,312	
		Beta	t	p
C	Intercept	0,03	0,13	0,90
X	Overdue debt (in household)	0,25	5,46	0,00
Z1	Gender	0,07	1,76	0,08
Z2	Age	0,01	0,84	0,40
Z2	Age ²	0,00	0,43	0,66
Z3	Education: 8 primary school	-0,09	-1,09	0,28
Z3	Education: profession	-0,28	-3,35	0,00
Z3	Education: A-levels	-0,29	-3,27	0,00
Z3	Education: degree	-0,52	-4,57	0,00
Z4	Settlement development	0,00	-1,30	0,20
Z5	Ability to pay			
Z6	Net income			
Z7	Registered job			
Z8	Forex loan			

Source: Questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Note: This table introduces further model specifications to the models discussed under chapter 4.6.3. The model is based on OLS regression. C is the intercept; X is the main explanatory variable and Zi are the control variable. X variable indicates if there is someone in the household, who has overdue debt. The Z3 reference value is the education level less than 8 primary schools. The absolute values of the indicated modified R2 are less important here, as the purpose of this model is to analyse the causality and not to use it for predictions. Results are similar when calculating robust standard errors. If the coefficient is significant at 1%, 5%, 10% significance level, we mark the p values with ***, **, or * respectively.

Table 17: Overdue debt and health model specifications 4

		Y= Unhealthy index N=480 Modified R ² =0,385			Y= Unhealthy index N=480 Modified R ² =0,381		
		Beta	t	p	Beta	t	p
C	Intercept	-0,32	-1,28	0,201	-0,29	-1,17	0,244
X	Overdue debt (in household)	0,24	4,88	***0,000	0,26	5,30	***0,000
Z1	Gender	0,09	1,90	*0,058	0,10	2,24	**0,025
Z2	Age	0,02	1,60	0,111	0,01	1,30	0,194
Z2	Age ²	0,00	-0,33	0,741	0,00	0,00	0,999
Z3	Education: 8 primary school	-0,10	-1,27	0,207	-0,10	-1,29	0,199
Z3	Education: profession	-0,23	-2,77	***0,006	-0,24	-2,87	***0,004
Z3	Education: A-levels	-0,26	-2,84	***0,005	-0,27	-3,06	***0,002
Z3	Education: degree	-0,47	-4,00	***0,000	-0,49	-4,37	***0,000
Z4	Settlement development						
Z5	Ability to pay	-0,09	-2,52	**0,012	-0,09	-2,47	**0,014
Z6	Net income	0,00	0,18	0,855			
Z7	Registered job	-0,08	-1,45	0,148			
Z8	Forex loan	0,02	0,42	0,674	0,01	0,25	0,803
Z9	County district 54	-0,04	-0,31	0,757	-0,02	-0,16	0,872
Z9	County district 55	0,22	1,80	*0,072	0,23	1,91	*0,057
Z9	County district 56	0,35	2,75	***0,006	0,38	2,98	***0,003
Z9	County district 57	0,29	2,24	**0,026	0,31	2,45	**0,015
Z9	County district 58	0,12	1,00	0,320	0,14	1,19	0,234
Z9	County district 59	0,26	1,85	*0,065	0,28	2,00	**0,046
Z9	County district 60	0,15	1,25	0,213	0,13	1,15	0,251
Z9	County district 61	0,21	1,97	*0,050	0,22	2,08	**0,038
Z9	County district 62	0,41	3,29	***0,001	0,43	3,54	***0,000
Z9	County district 63	0,19	1,39	0,165	0,19	1,40	0,162
Z9	County district 64	-0,13	-0,96	0,340	-0,10	-0,72	0,470
Z9	County district 65	0,17	1,09	0,279	0,21	1,34	0,181
Z9	County district 66	0,15	1,36	0,175	0,16	1,38	0,170
Z9	County district 67	0,29	2,21	**0,027	0,29	2,25	**0,025
Z9	County district 68	0,07	0,57	0,567	0,08	0,64	0,521

Source: Questionnaire-based survey, small settlements, BAZ County, Hungary, 2019

Note: This table introduces further model specifications to the models discussed under chapter 4.6.3. The model is based on OLS regression. C is the intercept, X is the main explanatory variable and Zi are the control variable. X variable indicates if there is someone in the household, who has overdue debt. Z3 reference value is the education level less than 8 primary schools. The absolute values of the indicated modified R² is less important here, as the purpose of this model is to analyse the causality and not to use it for predictions. The County District dummy variables serve to control county district level fixed effects. Results are similar when calculating robust standard errors, except for the County District dummy 68 which is not significant in this latter case even at a 10% significance level. If the coefficient is significant at 1%, 5%, 10% significance level, we mark the p values with ***, **, or * respectively.